SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[*The* MINING JOURNAL *is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.*]

No. 2446.—VOL. LII. LONDON, SATURDAY, JULY 8, 1882. PRICE (WITH THE JOURNAL) SIXPENCE BY POST £1 4s. PER ANNUM.

HODGSON & STEAD'S machines have been awarded PRIZE MEDALS wherever exhibited

WEIGHING MACHINERY

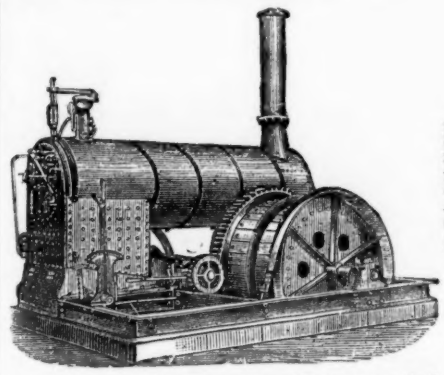
for all Commercial purposes

HODGSON & STEAD LD

Egerton Iron Works SALFORD

MANCHESTER

ESTD 1852



JOHN FOWLER AND CO.,

Steam Plough Works, Leeds; and 28, Cornhill, London, E.C.

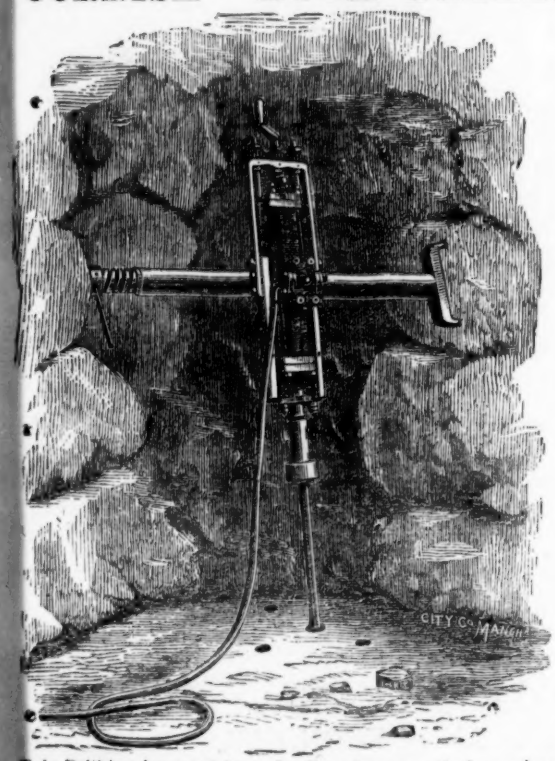
MANUFACTURERS OF THE

PATENT YORKSHIRE "COMPOUND" SEMI-PORTABLES.
HORIZONTAL STATIONARY ENGINES.
HAULING AND WINDING ENGINES, all sizes.
LOCOMOTIVES, various gauges.
AIR-COMPRESSORS, VENTILATORS, &c.
CLIP PULLEYS; STEEL WIRE ROPES.
MULTITUBULAR AND MARINE BOILERS.

SYDNEY AWARDS, 1880.
THREE
FIRST SPECIAL PRIZES.

Catalogues, Specifications, or References to Parties using our Machinery can be had on application.

McCULLOCH AND HOLMAN'S
PATENT
"CORNISH" ROCK DRILL.



This Drill has been constructed after a long practical experience in the requirements necessary for Mines, and has more than realised the expectations of its inventors. The chief objects in view were GREATER DURABILITY AND LESS LIABILITY TO DISARRANGEMENT; but it has also proved itself more EFFECTIVE AND ECONOMICAL.

We are now prepared to enter into any reasonable arrangement so as to enable users to judge of its merits, as we are thoroughly convinced that we can offer the BEST ROCK DRILL IN THE MARKET.

Further particulars on application to the Makers—

HOLMAN BROTHERS,
CAMBORNE FOUNDRY AND ENGINE WORKS,
CAMBORNE, CORNWALL.

SILVER MEDALS AWARDED AT CORNWALL POLYTECHNIC 1872 AND 1876.

THE WELL-KNOWN PATENT SELF-ACTING ORE DRESSING MACHINERY, as in operation at most of the large Mines in the Kingdom and Abroad, is now supplied solely by THE PATENTEE AND MANUFACTURER, Mr. GEORGE GREEN, Mining Engineer, AT GREATLY REDUCED PRICES also all descriptions of Mining Machinery, including
GOLD AND SILVER AMALGAMATING MACHINERY complete, Stamp Mills, Water Wheels, Steam Engines, &c.
ROLLER SHELLS FOR CRUSHING MILLS—a speciality.

SPECIAL DESIGNS FOR EXPORT AND DIFFICULT TRANSIT.

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PATENT
"INGERSOLL ROCK DRILL."

MEDAL AND HIGHEST AWARDS.

1872—American Institute.
1873—Ditto.
1874—London International.
1875—Manchester.
1875—Leeds.
1875—Cornwall.
1875—Rio de Janeiro.
1876—Australia.
1876—Philadelphia.
1877—Cornwall.
1877—Mining Institute.
1878—Paris.

We claim 40 per cent. greater effective drilling power.

LE GROS, MAYNE, LEAVER, & CO.,
SOLE AGENTS FOR THE
60, Queen Victoria Street, London, E.C.,
DUSSELDORF
WROUGHT IRON STEAM TUBE WORKS.

TUBES FOR BOILERS, PERKINS'S, and other HOT WATER SYSTEMS

For Catalogues of Rock Drills, Air Compressors, Steel or Iron Steam Tubing, Boiler Tubes, Perkins's Tubes, Pneumatic Tubes, and all kinds of Machinery and MINING PLANT, apply to—

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NORMANDY ROCK DRILL.
NORMANDY AIR COMPRESSOR.

THESE PATENT MACHINES ARE VALVELESS.

RESULTS OF TRIALS at CARDIFF EXHIBITION, on a block of Cornish Granite, on 24th September, 1881:—

	Inches.	min.	sec.
Normandy Rock Drill and Air Compressor, bored	1 1/16 × 10 1/4 in	2	10
Eclipse Rock Drill and Reliance Air Compressor	1 3/8 × 10 1/4 in	2	25
Beaumont Rock Drill and Sturgeon's Trunk Air Compressor	1 1/2 × 7 1/2 in	2	30

Normandy's have WON TWO GOLD MEDALS at the Melbourne Exhibition, 1880, and being the simplest, ARE MUCH THE CHEAPEST in first cost and in repairs.

A. NORMANDY, STILWELL, & CO.,
OPPOSITE CUSTOM HOUSE STATION,
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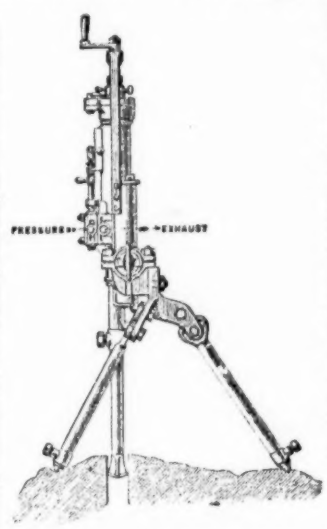
"Cranston" Rock Drill.

"CRANSTON'S" DEEP BORING MACHINERY FOR SINKING ARTESIAN WELLS, PROSPECTING FOR MINERALS TO ANY DEPTH. EMPLOYED BY THE WEST HARTLEPOOL WATERWORKS COMPANY, THE RIVER TYNE COMMISSIONERS, AND OTHERS.



DRIVING LEVELS 200 LINEAR FEET PER MONTH, IN HARD QUARTZ ROCK. IS EMPLOYED AT THE "EBERHARDT" SILVER MINES (NEVADA), THE "ST. JOHN DEL REY GOLD MINES" (BRAZIL); GREAT BRITAIN, BELGIUM, SWEDEN, INDIA, and other Countries

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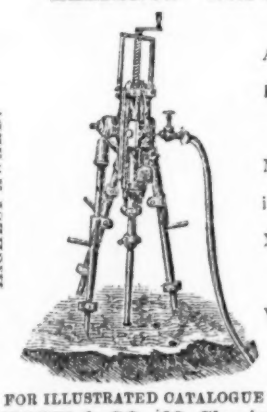
THE PATENT
"ECLIPSE" ROCK-DRILL
AND
"RELIANCE" AIR-COMPRESSOR

SILVER MEDEL.—PARIS, 1878 — HIGHEST AWARD.



Are NOW SUPPLIED to the ENGLISH, FOREIGN, and COLONIAL GOVERNMENTS, and are also IN USE in a number of the largest MINES, RAILWAYS, QUARRIES, and HARBOUR WORKS in GREAT BRITAIN and ABROAD.

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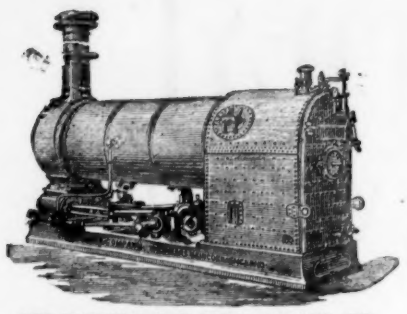
SOLID DRAWN BRASS AND COPPER BOILER TUBES

FOR LOCOMOTIVE OR MARINE BOILERS,
EITHER
MUNTZ'S OR GREEN'S PROCESS.
MUNTZ'S METAL COMPANY (LIMITED),
FRENCH WALLS
NEAR BIRMINGHAM.

HIGHEST AWARD MELBOURNE EXHIBITION, 1881.

ROBEY & CO., ENGINEERS, LINCOLN.



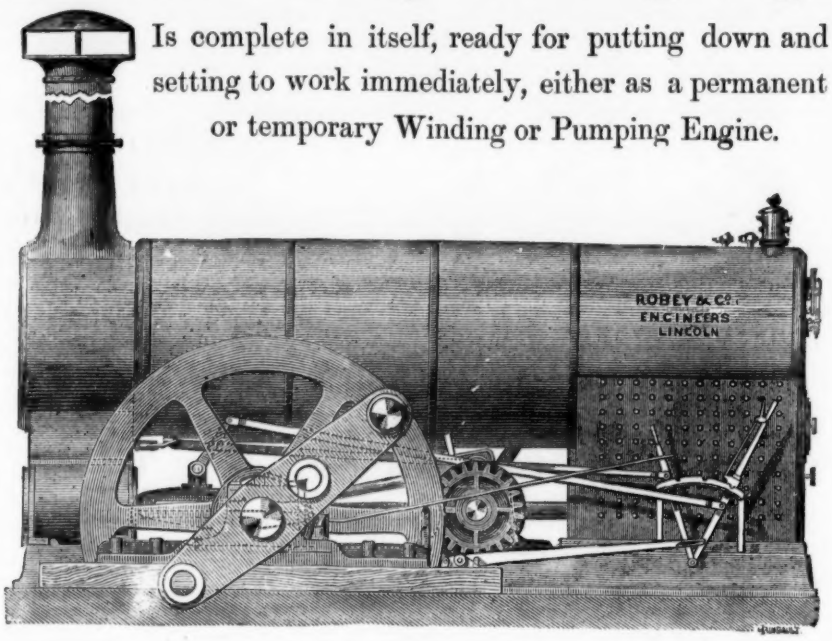
THE PATENT ROBEY FIXED ENGINE AND LOCOMOTIVE BOILER COMBINED
4 to 50-horse power.

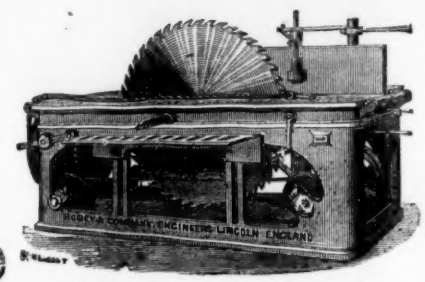
NOTICE.

TO COLLIERY PROPRIETORS, MINE OWNERS, &c.

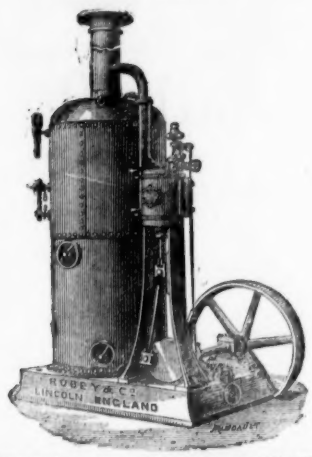
The Patent "Robey" Mining Engine

Is complete in itself, ready for putting down and setting to work immediately, either as a permanent or temporary Winding or Pumping Engine.

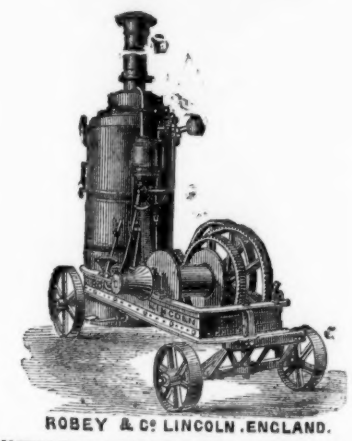




SELF-ACTING CIRCULAR SAW BENCH.



VERTICAL STATIONARY STEAM ENGINE AND PATENT BOILER COMBINED.
1½ to 16 horse power.



ROBEY & Cº LINCOLN, ENGLAND.
IMPROVED BARROW LIFT, or VERTICAL HOISTING ENGINE.

SUPERIOR PORTABLE ENGINES,
4 to 50-horse power.

ALL SIZES KEPT IN STOCK, FROM 6 TO 50-H.P. NOMINAL.

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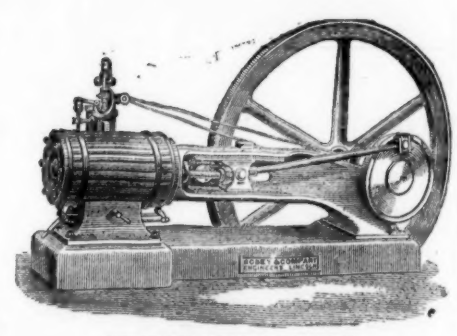


HORIZONTAL FIXED ENGINES,
4 to 60-horse power.

READING SHOW. STAND No. 254.—ROBEY AND CO. will exhibit at the Reading Show superior specimens of the above machinery.—READING SHOW. STAND No. 254.

ESTABLISHED 1850

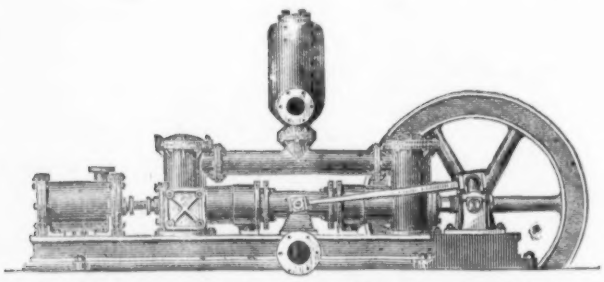
WILLIAM TURNER,

(LATE OMMANNEY AND TATHAM),

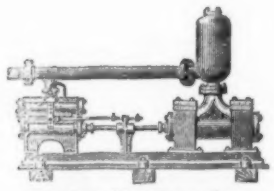
SALFORD, MANCHESTER.

FLY WHEEL PUMPING ENGINES

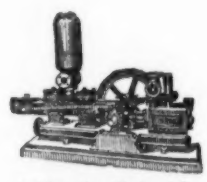
ARE THE ONLY RELIABLE ENGINES FOR STEADY WORK AND ECONOMY.



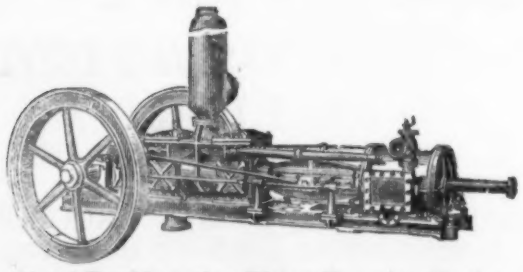
The 'Original" Double-acting Ram Pumping Engine.



Hydraulic Pumping Engine for Collieries.
Worked by Natural Head of Water, and saving much manual labour.



Double-acting Horizontal Pumping Engine.
For Feeding Boilers, Gas Works, Tanneries, Breweries, and all Pumping Purposes.



Direct Double-acting Piston Pumping Engine.

PUMPING ENGINES of all descriptions.

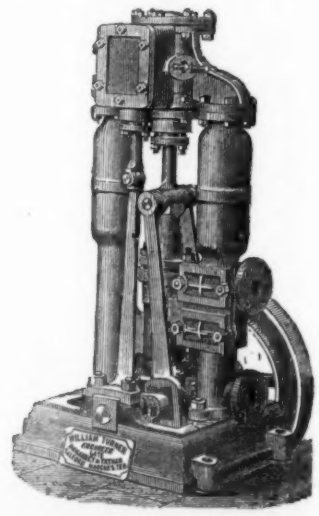
WINDING Ditto.

AIR COMPRESSORS.

HYDRAULIC ENGINES.

VALVES for Steam, Water, &c.

WIPPERMANN AND LEWIS'S PATENT AIR INJECTOR.
These Injectors are being universally adopted for Pumping Engines for Collieries & Waterworks.



The Salford Pump.

I. COPLEY & CO., ENGINEERS AND BOILER MAKERS,

MIDDLESBOROUGH, YORKSHIRE.

SOLE MAKERS

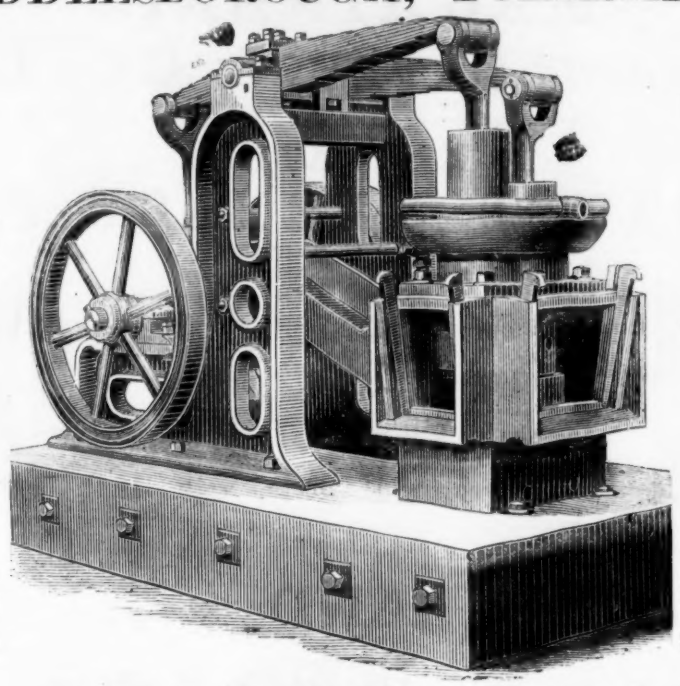
OF

DUNHAM'S

AMERICAN SPRING BEAM ORE STAMPS.

COMBINING ALL THE FEATURES WHICH EXPERIENCE HAS BROUGHT ABOUT IN REDUCING

GOLD QUARTZ.



THIS MACHINE CAN BE SEEN WORKING IN LONDON STAMPING

"GOLD QUARTZ,"

INVITATIONS WITH PROSPECTUSES WILL BE SENT TO THOSE INTERESTED ON APPLICATION.

These Machines are guaranteed to reduce more Quartz with less applied power than any Machines in the market.

N.B.—Quartz from abroad reduced for analysis through meshes of 400 to 900 holes to the square inch.

GOLD QUARTZ STAMPER.

LONDON AGENT:—A. H. REED, 90. CANNON STREET, E.C.

R. HUDSON'S PATENT STEEL (OR IRON) TRUCKS

ARE THE

LIGHTEST, STRONGEST, AND MOST CAPACIOUS MADE.

PATENTED EUROPE, AMERICA, AND BRITISH SOUTH AFRICA, No. 2677/1875, No. 50/1877, No. 3782/1878, No. 102/1881, AND No. 4683/1881.

WITH OR WITHOUT "END" DOORS AND "SWIVELLING" UNDERCARRIAGE FOR TIPPING AT EITHER SIDE OR END OF RAILS.

THOUSANDS IN USE BOTH AT HOME AND ABROAD.

Made t any size or gauge of rails

Over 100 Trucks turned out weekly.

R. HUDSON, GILDERSOME FOUNDRY, NEAR LEEDS.

MANCHESTER WIRE WORKS.

NEAR VICTORIA STATION, MANCHESTER.

(ESTABLISHED 1790).

JOHN STANIAR AND CO.,

Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for

LEAD AND COPPER MINES.

Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper

EXTRA STRONG PERFORATED ZINC AND COPPER RIDDLES AND SIEVES

PERFORATED IRON, STEEL, COPPER, AND ZINC PLATES IN VARIOUS DIMENSIONS AND THICKNESSES.

Shipping Orders Executed with the Greatest Dispatch

GOLD MEDAL AWARDED, PARIS EXHIBITION. 1878.

THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL, SHEAR, BLISTER, & SPRING STEEL

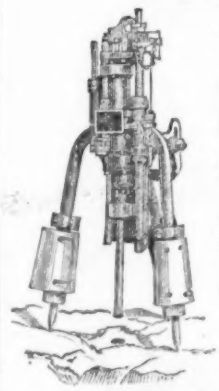
MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS. LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS AND SPRING WORKS, SHEFFIELD.

LONDON OFFICES—90, CANNON STREET, E.C. PARIS DEPOT—12, RUE DES ARCHIVES. BO MASS., U.S.—40, KILBY STREET.

THE "BEAUMONT" PATENT PERCUSSIVE ROCK DRILL.



(BEAUMONT AND FOSTER'S PATENT.)

The "BEAUMONT" DRILL is now offered to the public.

For the last three years it has been solely used with complete success by the Aqueous Works and Diamond Rock Boring Company (Limited), and Messrs. Beaumont and Co. in their several large contracts.

During this time it has been s improved and developed as to make it without doubt the best Percussive Rock Drill offered for Tunnelling, Mining, or Quarrying Work.

Price and prospectus on application to the Manufacturer,—

JOSEPH FOSTER,
MINING ENGINEE
BOW LANE IRONWORKS,
PRESTON, LANCASHIRE.

THE AQUEOUS WORKS AND DIAMOND ROCK-BORING COMPANY (LIMITED).

CROWN WORKS, GUILDFORD STREET, YORK ROAD LAMBETH, LONDON.

MESSRS. BEAUMONT AND CO.,
3, VICTORIA STREET, S.W., WESTMINSTER, LONDON.

Tripods, Tunnelling Carriages, Gadding Cars, Air Compressors, Air Pipes, and other Mining Machinery supplied.

Pumping Engines for Mines, Water Works, Sewage Works, and General Purposes.

CATALOGUES ON

PUMPING & MINING MACHINERY.

HATHORN, DAVEY, & CO., LEEDS.

Hydraulic Pumps.
Winding Engines.
Air Compressors.
Man Engines.
Capstans,
&c., &c.

APPLICATION.

TWO GOLD MEDALS.

SOLE MAKERS—

The LEEDS FORGE CO., Ltd.

Leeds, Yorkshire.

FOX'S PATENT

CORRUGATED FURNACE FLUES,

NOW APPLIED TO OVER

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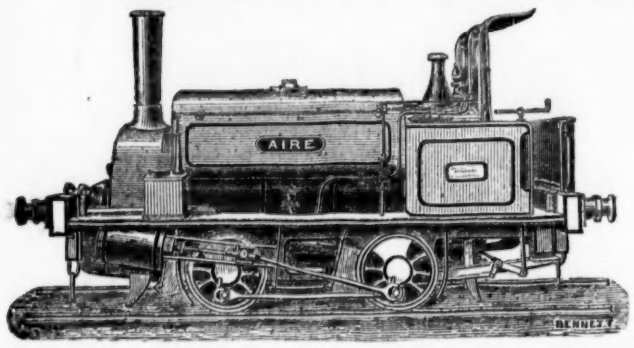
PARIS, 1878

PRICE LISTS AND PARTICULARS ON APPLICATION.

ESTABLISHED 1860.

HUDSWELL, CLARKE, AND CO., LEEDS.



LOCOMOTIVE TANK ENGINES

OF ALL SIZES AND ANY GAUGE OF RAILWAY.
OF GREATLY IMROVED CONSTRUCTION
FOR MAIN OR BRANCH RAILWAYS.
CONTRACTORS, IRONWORKS, COLLIERIES.

For Cash or Deferred Payments.

SOLE MAKERS OF RODGERS' PATENT WROUGHT-IRON PULLEYS.

The Only Knapping Motion Stone Breaker and Ore Crusher.

AWARDED THE ONLY SILVER MEDAL FOR MECHANICAL EXHIBITS AT THE ROYAL CORNWALL POLYTECHNIC SOCIETY, FALMOUTH, SEPT., 1881.

GUARANTEED to do MORE WORK with less power THAN ANY OTHER MACHINE in the World.

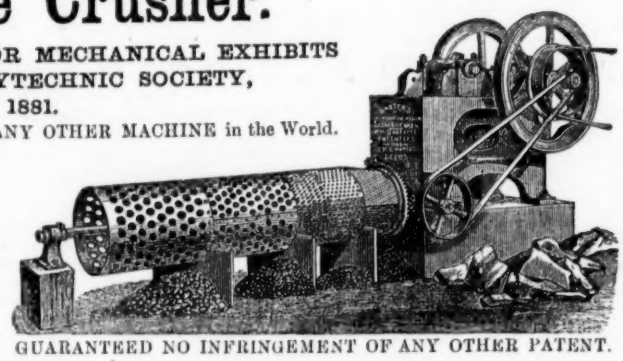
READ THIS—

The Bold Venture Lime and Stone Co., Peak Forest,
Messrs. W. H. Baxter and Co., *June* 8, 1881.

GENTLEMEN,—We have the pleasure to inform you that the 20 by 9 Stone Breaker supplied by you is now working to our entire satisfaction, and we are now able to fulfil our contract with ease, which we had much difficulty in doing before with the Blake Machine. It takes less power and turns out considerably more stone.

Yours truly,

BOLD VENTURE LIME AND STONE COMPANY.



GUARANTEED NO INFRINGEMENT OF ANY OTHER PATENT.

YORKSHIRE AGRICULTURAL SOCIETY SHOW, HALIFAX, AUGUST 1ST, 2ND, AND 3RD.

W. H. BAXTER & CO. beg to announce that they will Exhibit one of their 16 by 9 PATENT KNAPPING MOTION STONE BREAKERS, with Patent Draw-back Motion on Wheels, and with Improved Revolving Screen and all the latest improvements, and Challenge any other maker of Stone Breakers to come forward with a Machine the same size to do the same amount of work with the same power and in the same time either for Breaking or Crushing any kind of material.

FOR FULL PARTICULARS ADDRESS TO THE PATENTEES AND SOLE MAKERS,

W. H. BAXTER & CO., ALBION STREET, LEEDS.

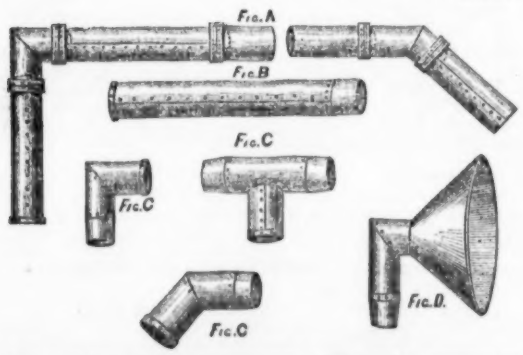
SOLE AGENTS FOR LONDON AND DISTRICT—

THOMAS GREEN AND SON (LIMITED), ENGINEERS, BLACKFRIARS ROAD, LONDON, S.E.

COLLIERY VENTILATING TUBES.

WILLIAM THOMPSON,

MANUFACTURER OF



COLLIERY VENTILATION TUBES.

Fig. A,—Shows the tubes adapted for any variation in direction.
Fig. B,—Straight length of tube.
Fig. C,—Different angle bends.
Fig. D,—Is a hopper to receive air at top of shaft.

Wrought-iron Buckets.
Baskets, Kegs, Pit Tubs,
Ash Barrow Bodies,
Ventilating Tubes for
Collieries, Tanks,
Kibbles for Copper
Mines, &c. General
Sheet Iron Worker.

Highfield Works, Ettingshall, near WOLVERHAMPTON.

FOREIGN MINING AND METALLURGY.

As regards the French iron trade, it may be observed that the demand has not by any means fallen off in the St. Dizier district. On the contrary, it appears to have become more decided. Order books have been replenished with instructions for the delivery of pig and iron of well-nigh every description. Under these circumstances, if it cannot be said that a rise is under consideration, it may, at any rate, be affirmed that there is no downward tendency in prices. Coke-made iron has remained at 8*l.* 8s. per ton at St. Dizier, and mixed iron at 9*l.* 4s. per ton. At Paris iron has been selling at 2*l.* 4s. per ton, with concessions, in some cases, of 4s. per ton. It is said that contracts are about to be let for 200,000 tons of steel rails for the French State railways. The German iron trade presents a favourable tendency, although some descriptions of pig appear to be less firmly supported. Iron has been well maintained, and plates are also in good demand. As regards the steel works, it may be said that they are overdone with orders. In Austria the iron trade is at present in its dead season; at the same time, prices have been maintained, and for some varieties—especially for plates, iron, wire, and steel—they have even experienced a small advance. The production of rails has been carried on with much activity in Austria. Orders for the current year are numerous, and next year it is expected that contracts will be let for 35,000 tons of rails for a line of some importance in Gallicia. The production of coal in Upper Silicia amounted last year to 10,365,000 tons, as compared with 10,150,000 tons in 1880, and 8,910,000 tons in 1879.

There is considered to be a marked revival of activity in the Belgian iron trade. The fall in prices appears to have been checked, firmness has taken the place of feebleness, and hesitation has been succeeded by confidence. There has been no advance in prices at present, but transactions have become more numerous, and have been carried through more easily. Producers do not now find it so necessary to seek out new clients and to tempt them by concessions; on the contrary, orders have been received from abroad accepting with discussion the tariffs semi-officially issued. The aspect of affairs is almost everywhere favourable; in France, as well as in Germany, work is abundant, and the future presents itself under an encouraging aspect. At the same time, we cannot overlook the fact that until the aspect of political affairs has improved in the East a certain amount of hesitation will prevail, and capitalists will show a disinclination to undertake new industrial operations. The Egyptian troubles is, indeed, the black spot in the situation. However, for the present the tone of affairs is decidedly favourable. Pig has been maintained with firmness, and iron has made 5*l.* 4s. per ton, while girders have realised 5*l.* 12s. to 5*l.* 16s. per ton. Plates have experienced no change in prices; boiler-plates have also remained at 8*l.* per ton. It is stated that contracts are about to be let for 1000 carriages, trucks, and vans for the Belgian State Railways. The period chosen for letting such contracts appears to be well selected, as new materials are not at present at a very high rate.

The general tone of the Belgian coal trade continues favourable stocks are everywhere less important than they generally are at this period of the year, and deliveries are also in excess of the ordinary amount. Upon almost all sides the demand for coal appears to be becoming more decided; there is a desire to conclude contracts for as long a period in advance as possible, and such a circumstance generally precedes a rise in quotations. This advance has, in fact, almost generally begun already. Coke has maintained former rates, but some concessions have been made in the case of important transactions. M. Berchem, principal engineer of mines at Namur, has just issued his report on the condition of mining industry in the province of Namur in 1881. As in 1880, there were 38 coal mines in the province last year, and of these 17 were in activity. The production of coal in the province in 1881 was 419,569 tons, as compared with 494,562 tons in 1880, and 417,456 tons in 1879. The average selling price last year was 6s. per ton, as compared with 6s. 6d. per ton in 1880, and 5s. 9d. per ton in 1879. The number of workmen employed last year was 2568, as compared with 3111 in 1880. The production of coal per man employed was thus 163 tons in 1881, as compared with 159 tons in 1880. According to Mr. Berchem, coal mining industry was carried on at a loss in the province of Namur in 1881. The German coal trade remains in much the same state. In the basin of the Saar considerable activity prevails, and in Silesia producers have not much to complain of.

NEW EMMA SILVER MINING COMPANY.—The new company for taking over and developing the celebrated Emma Mine may now be considered firmly established, and the resolution confirmed at the meeting of shareholders, held last week, renders litigation in the future virtually impossible, since the Cincinnati property being now acquired disputed boundaries questions of titles to bodies of ore are now entirely avoided. No money whatever has been paid for the Cincinnati claim, the 8500 new shares created representing the total purchase price. The capital of the company is now 785,000*l.*, in shares of 10*l.* each, and there is a working capital of 25,000*l.* in hand, an amount which it is estimated will be ample to carry on the enterprise until the mine is self-supporting. Active operations were commenced at the beginning of June, the snow having remained unusually late this year, so that they have the entire season before them. Full confidence is felt in the business and practical ability of Mr. Cullen, the superintendent; and whilst the shareholders may now be congratulated upon their excellent prospects, all who have been engaged in the negociations are entitled to the highest praise for the manner in which they have been carried through.

HOLLOWAY'S PILLS.—In order that the slightest indisposition may not raidly run its disastrous course from bad to worse, the afflicted of every age and class should give it immediate attention. A few doses of these thoroughly purifying and strengthening Pills will always be beneficial when the least disorder reigns, or when nervous fears oppress. Two or three Pills at bed time have the happiest effect in promoting perfect digestion, whereby the muscles are rendered more vigorous, the spirits more buoyant, and the entire frame more hardy. Holloway's medicine increases the quantity of nutriment derivable from a given quantity of food, and also the quality of the blood is improved, the tone of every fibre throughout the body is heightened, and the disposition to fall into disease is reduced to a minimum.

Original Correspondence.

AURIFEROUS SULPHIDES.

SIR,—I fear that my letter of June 24 has been misunderstood. A gentleman who signs himself "M." writes stating that my figures are incorrect. He says that the St. John del Rey Company only saves some 73 per cent. of the assay contents of the mineral stamped. Very true. But he must remember that only from 7 to 10 per cent. of the mineral stamped ever goes to the amalgamating machinery, and that this machinery does extract 95 per cent. of the assay value of the concentrated sand subjected to amalgamation. The loss he speaks of takes place in the process of concentration, and has nothing to do with the amalgamating machinery or effective duty—from which we might infer that if water-power were sufficient to amalgamate all the sand without any concentration, 95 per cent. of the assay contents of the mineral stamped might be extracted.

Again, "M." says—"The sand or pulp does not afford 40 to 50 per cent. of pyrites," and wishes to prove this by the fact that in the year ending Feb. 1881, only 6·7 per cent. of the mineral stamped was brought to the amalgamation house. Might I ask this gentleman what the company would have done with it supposing a larger per centage of sand had been caught, considering the limited accommodation of the amalgamating machinery? Mr. John Arthur Phillips, in his valuable book on the Mining and Metallurgy of Gold and Silver, states on page 210, that "the composition of what is called pure ore (of the Morro Velho Mine) may be taken at about 43 per cent. of silica, and 57 per cent. of pyritous matter." Now I have no reason to believe that the composition of the mineral has changed in depth, and if the company cannot raise sufficient pure mineral to keep all the mills supplied with the material, it is so much to their disadvantage, but does not alter the fact that the pure mineral contains between 50 and 60 per cent. of pyrites, or 10 per cent. more than even I stated in my letter. I would venture to say that there have been years when by far the greatest proportion of the pyrites never went near the amalgamation house.

Broadway Chambers, Westminster, July 4. E. FOX BUTLIN.

MYSORE REEFS GOLD MINING COMPANY.

SIR,—In last week's Journal I find in the report of the meeting of the Mysore Reefs Gold Mining Company that the Chairman, in reply to a question about the machinery, said—"We have eight stamps erected, and eight more in the course of erection." Will you kindly allow me as the designer and erector of these stamps to say that when I left the company's works on April 15 last all the 16 stamps were ready for work, together with four amalgamators (one for each battery of four stamps), and that the engines to drive the stamps and work the amalgamators were fixed and ready for work. The only parts not completed were the two steam pipes to connect the engines with the boiler, which was also ready for work. The shoots from the batteries to the amalgamators were not fixed, for I considered it unwise to fix these, as with the thermometer at 90° or above in the shade the effect would have been that they would be sure to leak unless fixed at the break of the south-west monsoon, which would take place about the middle of May, and which I hear since my return was very heavy in its discharge of rain. This I have no doubt would fill the three dams (calculated to hold nearly 1,000,000 gallons) that I had formed. These 16 stamps, with the aid of a stone-breaker, which was also fixed and ready for work, would be able to reduce over 300 tons of stone every 24 hours. The only delay that could occur in the use of the stone-breaker was the non-arrival of a pulley to drive it, for which I had sent a drawing to the secretary several months since, but up to the date of my leaving it had not arrived.

I think it due to myself as the late manager of these works to say that all that has been done had been accomplished in seven months, that is from Sept. 15, 1881, to April 15, 1882. I found the place a jungle at the first named date, and on the day of my leaving it was in the condition named above, with the addition of eight shafts begun, two of which were 63 ft. deep each, and the total 263 ft. In consequence of the non-arrival of a smith these shafts were not begun till Jan. 16, and were stopped working on March 18. In addition to the above works the necessary houses were erected for manager and men. HENRY MOON, M.E.,

Late Manager of the Mysore Reefs Gold Mining Company.

London, July 4.

GOLD AND DIAMOND MINING IN SOUTH AFRICA.

SIR,—Never since the discovery of the South African diamond fields have times been so bad, or the outlook more ominous. Diamonds are so low that companies which were on the point of entering the Dividend-List have decided to suspend operations for a time. In the share market there is literally nothing doing. On Monday last a new mine was given out about 20 miles west of Barkley; it consists of about 500 claims, and there were only applicants for 150. There was no competition and no sales. If this place had been discovered twelve months ago it would have been rushed by thousands of people, and the claims would readily have changed hands at 500*l.* per claim. There are hundreds of men in want of a job, and civil and mechanical engineers are at a large discount. I have no hesitation in debiting the company mania of twelve months ago with all our disasters. Most of the mines contain hundreds of claims that ought to be worked at a good profit, and were worked at a profit by private individuals; but since they have been put into companies many of them are worked for the benefit of a few, at the expense of the many. Some companies are honestly managed, and consequently pay good dividends, even with the present price of diamonds. Many more could do the same if they were properly managed. I am pleased to notice that the De Beers Central Diamond Mining Company has declared another dividend of 2½ per cent., making a total of 11½ per cent. for the first half of this year. This is one of the four good companies of De Beers, and is capable of paying much better dividends than it has hitherto done.

In the Kimberley Mine the dividend and non-dividend companies do not change their position. The Central Company still takes first place amongst diamond mining companies, and, even with a drop of 30 per cent. in diamonds, will pay splendid dividends. I find that by the end of this month they will have a reserve of 80,000 loads of blue diamond soil on the floors, worth at least 50s. per load, or 200,000*l.* The French Company are still hauling more reef than any other company, and, I think, I shall not be far wrong in saying that in twelve months they will be in a position equal to the Central. The British, Barnato, and Standard are taking out very large quantities of diamonds, and earning large dividends. The North-East Company is improving, and with a rise in the price of diamonds will do fairly well. The other eight companies in the Kimberley formation are not likely to pay for some time.

At Bultfontein some of the companies are finding fairly well. The Union is the most economically managed public company in this mine, and as their manager, Mr. Osborne, is a thoroughly honest and industrious young man, they are able to work at a profit. Most of the other companies if worked in a similar manner would yield corresponding results. At Koffyfontein it is simply absurd to say all the companies have stopped because of so many diamonds being stolen; as a fact they made the same mistake as many others—inadequate working capital. At Kamfersdam they are working on a small scale but are leaving a small profit. At Otto's Kopje they are finding some very good diamonds, and the directors having come to satisfactory terms with the promoters, it will be registered as a limited liability company forthwith. The diamond soil in this property certainly looks well.

Jagersfontein Mine is in the Free State, and, from my own knowledge, I am able to say that it produces the largest and best diamonds of any mine in South Africa; nevertheless, up to the present, none of the companies have been able to declare dividends, and the leading journal (The Express) of the Free State, whose interest it is to support the concern, writes as follows:—"Is Jagersfontein Mine a sham or not? We cannot help again reiterating our belief that it is one of the hugest swindles ever foisted upon the public. Do not let us again be misunderstood. We do not assert that there are no diamonds in the mine, but we repeat that Jagersfontein 'has ruined many, whilst benefiting but few.'" The above is certainly very misleading, and was evidently written by a novice in mining matters. If the writer had said some companies were swindles he would have been correct; but speaking of the mine generally, I, as a professional man, say that Jagersfontein contains the elements of success, but has been almost ruined through bad management.

Companies here are beginning to suffer in consequence of the conduct of the Transvaal Government. Kaffirs have been in the habit of coming here from the interior, as they say, "for the purpose of making a rise." They work from one to two years, and then return to their homes well clad, and well supplied with the ordinary necessaries of life. In returning to their homes the majority of the Kaffirs have to pass through the Transvaal, and that Paternal Government, ever solicitious of the pockets and property of others, levy a tax of 100 per cent. on everything in their possession—from their hats to their boots. This is not the worst, for it frequently occurs that young Boers assume the position of officials, and do a little collecting on their own account, so that by the time the Kaffirs reach their homes they are minus their hard earned property and in a most destitute condition. The result is we are losing the supply of Kaffir labour in that direction, and shall have to seek elsewhere.

In referring to the gold fields of the Transvaal, the Lydenburg correspondent of the Independent says: "The gold fields are almost at a stand still now. Mr. David Benjamin, along with Dr. Jorrison and Mr. Hollard, managed to arrange with most of the diggers when he was here last month. The compensation money has not been paid yet, but I understand everything is to be settled in August. The majority of the alluvial claimholders are to be allowed three years to work out their claims, paying a royalty of 2½ per cent. in addition to their old rate of 5s. per month. It is to be hoped that these matters will be all settled soon, so that the new company or companies may begin working at once, and not leave the whole place idle as it is at present. The Crocodile River gold fields, about which such a lot has been said and written lately, have not yet come to anything. I have seen it stated that the whole affair is a swindle; but while I do not believe all the glowing accounts of the marvellous richness of these new fields, it is simply folly to say that there is no gold there. The Volksraad is now sitting, and we cannot tell what laws affecting gold mining they may pass, but in the meantime I would very strongly advise diggers not to come up here."

The Diamond News quotes a writer in the Transvaal Advertiser: "I would advise companies intending to invest in the gold fields concessions to be careful what they are about. No one wishes success to the gold fields more than I do, or indeed to anything that may help to bring about the prosperity of the Transvaal; but I know that this prosperity can never be brought about by inducing companies from other countries to invest in bogus concerns for the benefit of a few speculators. If respectable English companies find that they have been, in slang parlance, 'let in,' it will do more than anything else to shut out English capital from the Transvaal. I have heard things about the gold fields lately, which prompts me to utter these words of warning. There are a good many millions in England waiting for investment in *bona fide* concerns paying anything over 5 per cent., and if we go rightly to work we shall get our share of the much needed capital; but if we allow unprincipled speculators to spoil the credit of the country, for the benefit of their pockets, we shall be left out in the cold, as we deserve to be."

I am careful to send you clippings from the papers here, so that your readers may have the unvarnished truth respecting the Transvaal. This information cannot fail to be unpalatable to some plausable enemies of England; but it may be the means of sheltering the pockets of some poor though gullable persons who can ill afford to be duped. That there is a little gold in the Transvaal there is no doubt; but that Messrs. Jorrison (the Attorney-General) Hollard, and Benjamin have to go to Europe to try and raise the coin for the purpose of compensating the diggers is equally true. If the Transvaal gold fields are not pretty near being played out, why need they suspend operations until they have been to England to get money to work them? When the gold fields were discovered in California in 1847, and Australia in 1849, the discoverers did not go rushing off to Europe to try and raise capital for their development; but every person kept their discoveries as secret as possible, and became rich. Then, again, is it likely, that if the Transvaal contained gold even in sightly remunerative quantities, that so many thousands of those healthy, robust Boers would be going about doing nothing, while their wives and families are destitute of the common necessaries of life, and in a state of semi-starvation? Is it likely that the discharged hands from Koffyfontein, Jagersfontein, Bultfontein, and and Dutoitspan mines would be going about idle for want of employment if there was a payable gold field so near? I say decidedly not. If the Transvaal was not worth the attention of speculators during the time of the peaceful British occupation, how much less is it worth the speculators' attention now that an Englishman's life is always in jeopardy, and his property liable to confiscation for the benefit of the first adventurer who will swear enmity against England?

Many of the readers of the Journal are aware that Mr. Edwin Bray has been working lead mines in the Marico district of the Transvaal for many years. I remember them six years ago, and they were then in full swing. Mr. Bray owns the only lead mine in the Transvaal that is worth a penny. He has spent a great deal of money in its development, and having the misfortune to be an Englishman he is considered fair game. I append Mr. Bray's letter on the subject:—"To the Editor of the Transvaal Advertiser.—Sir,—I have been informed that a concession has been granted by the Triumvirate to Mr. R. W. Read, giving him the monopoly to smelt lead, extract silver from it, and make silver coin. If such is the case, I think it most unjust, not only to myself who first developed and opened out this branch of industry—the manufacture of lead in this country—but also unfair to any party who has lead or silver ores on his property. From what I have been informed, no one can open out such mineral property without a licence from Read and party; Messrs. Hollins and Holder are partners with him on the new lead mine near Zeerust and are connected with him in the concession. Mr. Read passed through this place a few days ago, and stated he had just returned from Pretoria and had got the concession; if such is the case, I think this matter should be brought to the notice of the public and the Volksraad, and show them how injurious it will be to the development of this class of minerals in this country, also to the owners of property where such ore exists.—EDWIN BRAY."

No person has the prosperity of South Africa more at heart than I have, and I should be delighted at the discovery of a rich gold field; but such a discovery has not yet been made, and in my opinion such a thing does not exist. As I have always pointed out there are three or four places in the district of Lydenburg worth the attention of a company, but even those are very speculative; and speaking of the Transvaal generally, I say most emphatically, it is not rich in minerals, and has been very fitly described a land of samples. I have received a letter from Taungs, stating that on May 24 the Boers went to Takhoon to capture cattle which they succeeded in doing; but the natives of that place followed them up and retook the greater part of them, killing three Boers, getting their rifles, horses, and several other horses in addition. Mr. McKenzie has fled with most of the traders from Kurnman. The dogs of war are let loose, and it looks as though there will be a general war throughout this part of the country. The Boers are waiting to receive a field gun from the Transvaal Government to make another attack on this place, they having lost so heavily last time, that they do not consider it advisable to again attack us until reinforced and better armed. Mankorane has sent a letter to the Vice-President, Paul Kruger, and the British Resident at Pretoria, and also to the President of the Orange Free State protesting against the wanton massacre of his people without any provocation. Everywhere the Boers are the aggressors, and they appear to be so intoxicated with their late success over the British forces that their thirst for blood is insatiable. I have just seen a letter from a young man who was present, respecting the late unprovoked Boer attack on Mampoer, which I venture to to think is without a parallel. This chief was accused of building a new kraal in a strong position, and without warning a commando, under Gen. Joubert, was sent against him. Instead of proceeding to the new kraal, Joubert and his Boers lay in ambush near Mampoer's principal village until night, and when the unsuspecting men, women, and children were asleep, the pious Boers set fire to the village in various quarters, and a very large number is said to have perished in the flames. Considering that a Kaffir village is built entirely of dry reed, it is a miracle that any escaped. During this horrid confusion the Boers had no difficulty in stealing the cattle and bringing them into Pretoria in triumph; many of the details of this affair are too revolting for print. The British Resident must be fully conversant with this affair, as there was no secret about the matter, and the commando on their return boasted of the affair throughout Pretoria as something to be proud of. It will be seen that in its present state the Transvaal is no place for an Englishman, although there is no doubt his money would be very acceptable to us to enable the Boers to indulge in their favourite pastime of shooting blacks. I regret that both time and space compel me to hold over some very important matters for a future letter.

Kimberley, June 8. CORRESPONDENT.

INDIAN GOLD MINES.

SIR,—Some conflict of opinion having arisen as to the exact interpretation of the telegram from the Times correspondent in Calcutta, with reference to the result of the first crushing on the Indian Phœnix Estate, I have addressed an enquiry to the company, from whom I have received the following satisfactory reply, which will, doubtless, be interesting not only to shareholders in the Phœnix Company, but in all other Indian gold mines. WM. ABBOTT.

Tokenhouse Yard, July 6.

The Indian Phœnix Gold Mining Company,
6½, Austin Friars, July 5.

SIR,—In reply to your letter of the 3rd instant, I am desired to inform you that Mr. Grove was only following instructions in not sending an estimate as to the contents of the pyrites. The quantity of free gold was ascertained to be 21 dwts. per ton, so that 32 tons of quartz would produce 33 ozs. 12 dwts.; and if the proportion of pyrites is, as stated by Mr. Grove, equal to one-fifth of the quantity of the quartz crushed, there should be 6 tons 8 cwts. of pyrites, which should contain 19 ozs. 4 dwts. of gold according to the estimate in the Times telegram. N. W. RIXON, Secretary.

W. Abbott, Esq., Tokenhouse Yard.

OUR GOLD SUPPLY, AND CURRENCY

SIR,—As the question of a monetary standard and the supply of gold for coinage is attracting public attention and the serious consideration of some of our leading financiers, I beg you will allow me to make a few remarks on the subject, having given it some attention while in Australia, and lately in England. The production of gold has not hitherto received the amount of consideration that its importance demanded; but now that the rapid extension of trade, commerce, and financial operations have attained such colossal proportions, it is being found that the supply of gold is not equal to the requirements of the world's financial transactions. The enormous production of gold during the past 30 years, or what may be termed the golden era, has amounted to something like 800,000,000*l.* or 900,000,000*l.*, or about twice as much as was in use for financial purposes prior to that time, and there can be no doubt that the sudden influx of this vast, new, and permanent purchasing power has stimulated all branches of trade and commerce and financial operations to an extent which without its timely production would have been impossible. The energy and enterprise of a few gold miners have done more towards advancing the general prosperity of the world by the increase of trade, commerce, and financial operations by the production of such an enormous supply of gold than could possibly have been done by the production of any other articles of supposed relative value. Gold is real wealth, and the standard by which all other kinds of wealth are measured; its production is the creating of a new purchasing power, not only so far as its intrinsic value is concerned, but it is a wealth that when produced is the germ or means of producing additional wealth. It is different in its results from that of other productions; as it is not consumed, worn out, or destroyed its influence and its motion may be termed perpetual. Gold is the life blood of finance, trade, commerce, manufactures, arts, science, learning, and every other kind of wealth for the comfort and essential necessaries of mankind; its possession is the chief aim and consideration of all countries and civilised people; it is the chief standard stock or working capital of the world, from which all other sources of wealth are derived or radiate from.

To obtain an increased gold currency more attention must be given to the sources from whence the precious metal is derived, and that can only be done by aiding the legitimate development of the auriferous resources of those countries—Australia and California—from where our chief supply of gold has been obtained, and can be still procured, in such quantities as will meet the requirements of commercial nations. Gold and silver being the precious metals chiefly adopted as specie, or as a medium of exchange and currency for regulating the value of other commodities for the use and benefit of mankind, they being, in fact, the axis on which revolves the finance, trade, and commerce of the world, as also the general business, pleasures, and necessities of every day life, it is of the highest importance to all that their production should be made subjects for consideration more than has hitherto been done.

The production of gold is the creating of new and permanent purchasing power, and gold mining has become one of the most important industries of the world; its results are direct acting, and afford the means of opening up new avenues of trade and industries, which but for it would not be known or required. There need be no alarm as to the failing of our gold supply, or the means of increasing our gold and silver currency, without their being depreciated, or their relative values materially altered or interfered with.

In the papers I have lately written on the subject—"Our Gold Supply, and its effects on Finance, Trade, Commerce, and Industries"—I have specially pointed out the value of the gold already produced, the sources from whence obtained, and also the enormous extent of auriferous country awaiting development in our own colonies of Australia and New Zealand. The supply of gold from these colonies during the past 30 years has been from Victoria about... £200,000,000
New South Wales, Queensland, and New Zealand 75,000,000

Or (say) a grand total of not less than £275,000,000

the greater portion of which gravitated to England through the channels of trade and commerce. The present annual supply from these colonies being now about 7,000,000*l.* by the, comparatively speaking, few men engaged in gold mining. This yield is, however, capable of being materially increased by a judicious combination of capital and organisation of mining labour intelligently directed. In fact, I do not hesitate to say that from my personal knowledge of the mineral resources of the colonies, and the results and requirements of gold mining, that the annual yield of gold from the Australian colonies can be more than doubled in a few years if those who are so directly interested in the results of such an increase will but give the attention and energy to the development of the gold fields which the present prospects legitimately warrant.

The area of auriferous country prospected and proved payable in Australia is larger than Great Britain, and capable of affording profitable employment to tens or hundreds of thousands of gold miners, whereas the comparatively small number now engaged in that occupation do not average more than about two miners to each square mile of auriferous country. Thus, supposing the gold producers in Australia were increased by 100,000 miners, they would at a moderate computation of earnings (say, ½ to 1 oz. per man weekly) increase the annual yield of bullion from 10,000,000*l.* to 20,000,000*l.*; such an increase in the supply of gold would make a wonderful improvement in the development of other industries to the benefit of all connected with finance, trade, and commerce. Nature's national bank of issue in the gold mines of Australia will honour the drafts made upon it by industry and enterprise of capital and labour intelligently directed to an extent beyond that likely to be obtained by many other pursuits. There is ample room for the employment of many thousands of able bodied young men who have sufficient energy and enterprise to enter on an honourable and profitable field for employment of labour.

In advocating the special value of gold as a superior form of wealth, and the importance of developing gold mining to maintain the supply of gold requisite for the use of finance, trade, and commerce, it is not to be supposed that I in any way depreciate other forms of wealth, or undervalue the various industries of the world that all tend to promote prosperity, and supply the wants of mankind. The requirements of modern civilisation, as also, finance, trade, and commerce, render it necesary that a supply of gold should be continuously produced in quantities proportionate to the increase of population and their necessities. To ensure that supply it is necessary to consider the source from where it is derived, for while other articles of value may be produced in profusion, and yet add little to the world's wealth, gold, the solid basis and foundation of other wealth, the article of special value which all mankind are seeking for, can be procured, or its supply increased, only from one source—that is, by gold mining. All the clever systems of finance, the issue of paper money, the trading and manufacturing resources of the country, will not add new bullion to the currency of nations; that can only be obtained by the miners who seek the precious metals in the earth.

Trade and commerce, as increased by the application of steam-power, could not have increased the world's wealth in such rapid strides as has been done without the power and influence of the great supply of gold since its discoveries in California and Australia. Gold being that special form of wealth that all sections of civilised humanity, from the cradle to the grave, are desirons of acquiring, that all nations, creeds, and countries are striving with each other to become its possessors, it stands to reason that the question of its future production is a matter of the utmost importance. The question of the relative values of gold and silver as used for financial purposes I will treat on in another letter.

THOMAS CORNISH, Mining Engineer.
(Author of "Gold Mining: its Results and its Requirements.")
Fenchurch-street, E.C.

MINING PROGRESS IN BRAZIL.

SIR,—I recently noticed a statement in the Journal that the "Elephant" stamps are in use in Brazil. They have been tried by the St. John del Rey Company at great cost, and after breakages innumerable they have been abandoned. The trial took place a long time ago, and I must say that the Elephant stamps are not in use in the Brazil. I regret being obliged to correct so numerous mistakes or mis-statements as are made respecting affairs in this country, but I assume that your readers want facts, and the truth. I notice that Mr. Del Mar—in "Where our Gold Supply is to come from"—publishes data which he gathered in Brazil, some history which can be read, with many additional facts in any library in London. I must protest against any elaborate condemnation of Brazil after the very hurried visit of Mr. Del Mar. I saw the gentleman in France last November, since which time and before April of this year he visited, and now reports on a mining province of some 650,000 square miles extent, through which he could only travel on mules or horses, at the rate of 25 or 50 miles per day. I travel through and about the centre of the province every month. I see most of the mines that are being worked. I have seen no one who has heard of Mr. Del Mar. Of course, I assume that his journey was limited, as was his time. The journey from France to the borders of Minas and return cannot be made inside of 45 days. A visit to Morro Velho has been the usual thing for anyone who wanted to see Minas, and there a traveller would in times past be told that there was nothing good in mining outside that company's property.

I did not expect that Brazil was to be "written up," but as it is a country full of mineral wealth, full of quartz and pyritic gold mines, with but little deep working, I protest against a snap judgment being taken on such evidence as has been given so far by Mr. Del Mar. I have not yet seen his "special" letter on the Brazil; such superficial study as has been given to this part of the world does not entitle the opinion of the author of "Where our Gold Supply is to come from" to much consideration. I shall watch the further movements with interest. Let me add I am not puffing Brazil; I have no mines to sell. My present budget of news is not very important. The caving of the Santa Barbara workings is a serious affair; a number of miners are turned out, and are seeking employment elsewhere. Nothing better of the Brazilian gold mines at Descuberto; they are working a few stamps on stuff of little value. Cuiaba lode, St. John del Rey Company: Ore cut in the deep adit is very poor. St. John del Rey, Morro Velho: Water again in the shaft.

Don Pedro still hopeful, working out surface shoots of gold-bearing jacotinga, and looking to London for money to steam up with. The luxury of keeping a steam-engine and an engineer without work for either is indulged in. Much credit should be given to Mr. Heilbut and his assistants for their efforts to keep the concern on its feet—they are workers, and they have so far saved the company. Passagem Mill is to commence crushing ore in a few days. This is the old Anglo-Brazilian Company's bequest. We shall see if careful work, with some improvements on the old mode, will result in anything good. Borges Mines: The second run of 50 tons gave 16¾ oits gold per ton. Only sampling work is done at the mill, which was borrowed for the purpose, and is distant two miles from the mines. Two rich chimneys are opened; one is extensive. The prospectors realised 2540 oits. of gold last month. At St. Joao do Morro Grande a small line of jacotinga has been cut, and a canal will be made to open it to the water level. This mine being so near the famous Gongo Soco much is expected from deep work. It is simply exploring work, and is under the charge of Capt. Wm. Verren. Labourers are applying every day at the various mines for employment. The near approach of the railway aids very much in attracting labourers from the lower country.—*Rapozos, Brazil, June 2.* MINAS.

FRONTINO AND BOLIVIA MINING COMPANY.

SIR,—The directors undoubtedly called the meeting for June 28, on the faith of the report for April being a good one, and being received in time for their use at the meeting. As a fact, they did receive it, but they withheld all knowledge of its arrival or contents from the shareholders, and no wonder, having regard to its most disheartening and disappointing contents. Indeed, we appear to be going from bad to worse for excluding the profit on Exchange and from Cordoba (which, as Mr. White says, is a separate undertaking) the mines have, during the first four months of this year, made an actual loss of 1000*l.*, of which over 700*l.* was made during April. Besides this, 1253*l.* was spent on capital account, making an actual expenditure over produce of 2000*l.* Well may Mr. Franklin White say in his report—"The results of the month of April were not so satisfactory as could have been desired." Imagine his saying this! This, too, after the Pocuné water has been at the mines for seven or eight months, and which Mr. White told us would give us an extra or additional profit of 2000*l.* a month, so that in point of fact the profit derived from Exchange and from Cordoba (and not the mines) is the source from which the proposed miserable dividend of 1s. is derived. Temporary causes alone, says the Chairman in his pleasant notes to the report, have caused this, but unfortunately for him, these temporary causes are now general, from first one cause and then another, and literally verify the remarks (as many shareholders will remember) that I ventured to make at the meeting as to these continuous disappointments both as to the past and the future.

Now, Mr. White has been in the service of the company since August, 1874, and since October, 1878, in actual charge of the mines, and what has he done? From April, 1879, to the end of 1881 the mines produced gold which realised over 184,000*l.* sterling, out of which Mr. White has spent, in one way or the other, 182,000*l.*, in addition to 15,000*l.* and odd new capital raised in 1880 and 1881, making altogether 197,000*l.* which this very able and careful manager has spent on the mines, leaving the shareholders, as their share, the munificent sum of 2000*l.*, and which, with the 17,000*l.* and odd made by profit on Exchange, has been the source from which the dividends have been paid, and not from the profits derived from the mines themselves. Yet in 1879 (or three years ago), Mr. White writes:—"Barring the drawbacks consequent upon the Civil War, I can safely assure you that we have now reached the lowest and turning point of our fortunes." Again, in May, 1881, Mr. White reports (p. 38)—"Until the Pocuné water is fully utilised you will have the normal profits of the mines—say 2000*l.* per month—to pay dividends with!" Where are they?

At p. 39 Mr. White says:—"We can certanly stamp over 3000 tons a month with the Pocuné water at the mines. It is more than clear that, as the water will be used principally in our best mines, that our average per ton will be 1½ oz." But in his report of June, 1882, he says:—"We shall, I am sure, be in a position to reduce 3400 tons. I believe the mineral will produce 1½ oz. per ton (not 1½), or say, a value of 10,000*l.*, the working cost will be 5000*l.*, and the profit 5000*l.*" Now, Mr. White puts the working cost at 2*l.* per ton; 3400 tons at 1½ oz. per ton only gives 9800*l.*, whilst the working cost at 2*l.* is 6800*l.*=3000*l.*, against 5000*l.*, as stated by Mr. White, and this without reckoning any of the thousand-and-one contingencies or temporary causes, as they are called, that are continually occurring at the mines. Then the reduction by Mr. White between his report for May, 1881, and June, 1882, of a ½ oz. to the ton does not seem of any importance to Mr. White, although he had doubtless forgotten the 1½ oz. or he would have repeated it.

Then as to the working expenses, what is the justification for running these up from 10s. in 1874 and 1875 to 1*l.* in 1879, and since to 2*l.* and even 3*l.*, and averaging now about 2*l.* 8s. per ton, whilst such a mine as Javali in the same country cover all their expenses by about 10s. a ton; it is clear that there is and has been gross extravagance in the expenditure, and that until this item is sensibly and materially reduced and brought nearer to what it used to be and ought to be, there is not any prospect of these mines (good as they otherwise are) being brought into a paying and profitable state whatever Mr. White may say. All I can say is, that now until Mr. White can prove by results the promises he has held out ever since the year 1874 down to the present time, it is impossible to place any reliance either upon his reports or his promises, and as the board do not appear to have done anything besides letting Mr. White do as he likes, and have endorsed and approved of all he has ever said or done, the board, in my opinion, stand in precisely the same position; indeed, I think great as is the disappointment and want of faith in Mr. White and his unfulfilled promises, it is quite as great or greater with regard to the board, and, in my opinion, it is quite time that the shareholders awoke to their true interests and insisted upon a complete overhauling both of the board's and Mr. White's management, or rather absolute want of management, and which to my mind is most deplorable in the true interests of the shareholders. We are continually reminded by the Chairman about Mr. White's self-denial in so working the mines simply for the benefit of the shareholders, that he thereby foregoes his own percentage on the dividends which would otherwise be paid; all I can say is, that I, for one, do not believe in such self-denial. Then, again, have not all Mr. White's promises and reports as to Antioqua been absolutely and entirely misleading from the beginning to the present time, equally with those relating to this compauy. How, then, in the name of common sense, can we in the face of all these things look upon Mr. White (as the board do) as the perfect manager. Mr. White may, for aught I know, be an able expert and theoretical miner; but he has yet to prove that he is a practical man, fit to be intrusted with the commercial management of such a property as this, and until he has proved it I, with many others, decline henceforth to place any confidence in him. THOMAS BAXTER.

July 5.

FRONTINO AND BOLIVIA MINING COMPANY.

SIR,—Since the meeting of the company on June 28 the shareholders have received the monthly report for April, and they have had time to compare it with Mr. White's report which was put into their hands on the day of the meeting. It is open to remark that the report for April was not issued to the shareholders prior to the directors asking them to adopt the report and accounts for the half year ending December last. If the directors had received the monthly report and accounts, and had them in their possession at the time of the meeting, we think that some general information as to their contents, and the result of the month's working, should have been given seeing that the board was preparing to distribute a dividend for the period of three months ending March. It has not yet been intimated when the dividend is to be paid, and shareholders may entertain unpleasant suspicions that the directors doubted how their report might be regarded, and what the shareholders might think if the aspect of the monthly report for April were candidly shown.

Mr. White in his report (p. 15) fairly puts the matter of this mine thus: "I am well aware that our mining operations must be judged from a practical point of view—that the real question is—how much mineral and gold can you produce, and what will it cost you to produce it?" This is undoubtedly the question, and the real question.

Of course the producing power of the mine, and the return to the capitalist therefrom, involves the keeping up or maintenence of that producing power; in other words the mine must be worked, so that whilst a fair return is obtained from it, it is being fairly developed; that in fact it is being worked in a proper and workmanlike manner. Judged by this test how does the case stand? In Nemeneme, Restaurador, and Palmichala mines the shareholders' money has been spent, and Mr. White says: "In Nemeneme we have, in obedience to the wishes of the shareholders, suspended work unfortunately at a moment when the mine held out every promise of soon becoming productive." "In the Restaurador we had hoped to make it profitable." . . . but "we have leased it." "In the Palmichala we have a fine mine, &c., but I have given notice to the agent that if he cannot make it pay working expenses he will have to suspend the work." So much for three of the company's mines. It may do for Mr. White, under the influence of the board, to try to shift the responsibility on to the shoulders of the shareholders, but we think that body will decline the compliment.

Now as to the mines generally, Mr. White says—"Whereas in the year 1879 we could barely produce from the mines 1000 tons of mineral, and not only possessed no reserves to speak of, but were positively short of mineral in many of them, we can now, leaving the Cordoba Mine out of the question, turn out from our mines 3400 tons of mineral per month without in any way affecting the reserves; further that we possess reserves which will enable us to tide over any bad or unfavourable changes which the mines may from time to time present." We judge that Mr. White left the mines early in April, and that his report speaks of them as at that time. Take the following seven mines for that month, first glancing at the total return for the month. The whole of the mineral stamped in April was 1963 tons, including 448 tons from Cordoba Mine, which if deducted leaves 1515 tons, being less than one-half of 3400, the producing power given in Mr. White's report. It is made up partly of

Cecilia Mine	184	tons.
V.R. Mine	49	,,
San Joaquin Mine	236	,,
Tigrito Mine	158	,,
Rosario Mine	67	,,
Silencio Mine	363	,,
Salada	360	,,

Of these seven mines, Mr. White says:—

CECILIA.—We have placed Cecilia in a position to supply 450 tons of mineral per month, but April shows 184 tons only.

V.R.—We have expended upon the V.R. Mine a sum of 3000*l.* in providing the mine with pumping machinery, 21 heads of stamps, in sinking the shaft to a depth of 120 ft., and extending the levels over upwards of 200 fathoms.

SAN JOAQUIN.—We have developed an extensive and speculative series of workings on the two lodes, where we have reserves capable of giving 400 tons of mineral per month, but April shows 236 tons only.

IN TIGRITO 1000*l.* has been spent.

ROSARIO.—2000 tons of mineral are said to be contained in backs, and works are being carried on which are to place the mine in a position to supply far more than 200 tons, the quantity set down in Mr. White's estimate, but April gives only 67 tons.

As to the SILENCIO MINE Mr. White says it "at this moment counts upon 11,000 tons of 2 ozs. mineral standing in the backs." . . "We are now able to treat 450 tons per month in our present stamps," but that when we have the Pocuné water on the mine we may reduce 750 tons per month. The April report gives 363 tons.

Finally, as to the Salada Mine most of the money has been spent in the development of that mine, and Mr. White says it is in a position to supply easily 1000 tons of mineral per month at a cost of $6 a ton, whilst the monthly report for April show 360 tons only.

It is not for us to doubt the estimates Mr. White has given of the producing power of the mines, nor do we doubt them. On the contrary we believe them, but that being so to what conclusion do they point? Is he over-rated as times make it convenient by the directors. Here are five mines, Cecilia, San Joaquin, Rosario, Silencio, and Salada, said by the manager to be capable of producing 2500 tons per month; produce in April, 1210 tons only.

We commend the subject to the consideration of the shareholders.
June 28. A SHAREHOLDER.

SEX, OR PRODUCTIVENESS OF MINERAL VEINS IN MEXICO.

SIR,—Referring to the articles which have recently appeared in the Journal on this point, the following facts may be of interest, being the results of personal observation in Mexico. In the Parral mining district, Chihuahua, every vein which is productive in depth, has a nearly north and south course, while the few east and west veins, though frequently affording a little rich ore near the surface, invariably either give out entirely or become barren within the first 50 ft. In the neighbouring State of Durango the same remarks hold good, one mining district illustrating it in a very marked manner—the Guanacevi district, which is situated about 120 miles south of here, among the first eastern foothills of the Sierra Madre or main range of mountains. Mining as an industry has been followed here for over 100 years by the Mexicans, who have in many shafts reached a depth of over 300 ft. The system of veins here consists of five parallel north and south veins, which are distinctly traceable, ard are worked on for a distance of over 12 miles north and south. These are intersected in many places by east and west veins, none of which run for any great distance, and in none of which has pay-ore been found below 40 or 50 ft. deep. Recently an east and west vein was opened on, which at the surface was over 10 ft. wide, and yielded rich ore, containing much native silver, a thoroughly "specimen" mine. A Mexican speculator disregarding the experience of others, and carried away by the rich surface ore, bought the claim, and commenced to sink on the vein, with the result that the pay-ore gave out within 20 ft., and the vein itself "petered out" within 60 ft. The same has invariably happened on every east and west vein in the district, while in no case on any of the north and south veins has either the pay-ore or the vein given out in depth, on the contrary, the ore has invariably increased both in width and richness with depth. As stated, the deepest shafts are somewhat over 300 ft., but in several parts of the course of certain of the north and south veins they are cut by watercourses to a depth of from 700 to 1000 ft. One of the veins so cut has about 6 ft. wide of pay-ore on the top of the hill, while at the level of the watercourse it yields a breast of better ore 11 to 12 ft. wide. Another vein cut to a depth of 1000 ft. by a creek yields 3 ft. wide of 60 ozs. silver ore above and a width of 6 to 7 ft. of 250 ozs. silver ore per ton below. In the shafts sunk on the mines the same facts are observable—on the north and south veins the ore increases in width and valne with depth. The explanation seems to be that these north and south ore courses are true fissure veins formed at the time of elevation of the adjoining mountains, while the east and west veins are produced by more recent and more local disturbances. As it may interest some of your readers to know the progress of mining here it may be stated that the Mexican Central Railroad now being rapidly built from El Paso, Texas (where it connects with three different lines of railroad to New York, and one to San Francisco), towards the City of Mexico, is bringing large numbers of prospectors and capitalists to this country, to look for mining property. In Parral there are at present four American companies at work, each owning a stamp-mill, and one company is erecting smelting-works to smelt 100 tons lead ores daily. In the neighbouring State of Durango, at El Oro, an American gold washing enterprise is at work; at Indée two American companies are in course of erecting stamp-mills for Carmen; another American company left here last week to commence erecting a 40-stamp mill; and for Guanacevi a Canadian company is now *en route* with a 40-stamp mill, and two American companies are negociating for mines, so as to erect 100 stamps at once. There is, however, still plenty of good mining property to be bought at reasonable prices from the Mexicans, and I know no more inviting field for the investment of English capital for the reasons—1. Proved mines can be bought here for less price than is asked for mere prospect holes in the United States.—2. The mining laws of Mexico are more favourable to miners and investors than those of the United States.—3. Security and safety to person and property is infinitely greater here than in the mining districts of the United States.—4. Titles are more secure and certain here, a title lawsuit for a mine being almost unknown, while everyone knows the endless and infinite litigation about titles in the United States, with its costliness and annoyances.—5. Wages and supplies are cheaper here than in the United States, and the price obtainable for silver bullion at the mints here is higher than in the United States, thus favouring the miner both in cost of production and selling price of his bullion product.—6. Climate and health are better in Mexico than in the United States mining district.

As to the mines and ores every investor must judge by personal examination. For my part, after 20 years' experience and four years in Mexico, I prefer Mexico at any time.

GEORGE WILSON, Mining Engineer.
Parral, State of Chihuahua, Mexico.

LOCAL CONCENTRATION OF THE POOR COPPER AND SILVER ORES OF CORNWALL.

SIR,—The question of dealing with poor copper and silver ores is an all-important one for the county of Cornwall, and on its successful solution depends the existence of a great number of our mines. From time to time new processes have been brought forward, the inventors of which have declared their ability to achieve wonderful results from the treatment of the latter class of ores; but, unfortunately, failure has been their common result, and a costly plant and heavy royalty their common feature. Any process which aims at settling this knotty question must combine cheapness of plant with simplicity of working, or its failure is certain. The existence of most of our mines is so precarious that shareholders would not be justified in laying out large sums in plant; and the knowledge of chemistry and metallurgy possessed by the majority of our mine captains is so slight that any intricate process would sure to end in failure. Wet processes have in some special cases proved successful for treating copper produce The history of humid processes for treating poor silver ores is, however, one of universal failure from a financial point, and in the great majority of cases the metallurgical results have not been satisfactory. That such ores can be profitably dealt with when in proximity to fuel has been proved over and over again, and given a satisfactory solution of the fuel difficulty. Cornish mining may be placed on a new footing, as the dry process combines cheapness of plant with simplicity of working. For concentrating ores of low ley the blast-furnace has been found far more economical than the reverberatory, especially in the item of fuel. Coal and coke are both necessary for working a cupola, except where water-power is available for driving the blast, in which case, of course, the former can be dispensed with. In properly conducted blast-furnace smelting 2½ cwts. is the maximum quantity of coke that should be used per ton of stuff smelted, while the quantity of coal used to drive the blast-engine would not amount to ½ cwt. per ton of material put through the furnace.

As South Wales is the source of the Cornish coal supply, the freight from thence to the Cornish mines must be taken as the basis for illustrating to what extent the local concentration of Cornish ores is affected by the fuel question. The rate of freight on coal from South Wales to the majority of the Cornish ports may be taken as 6s., and the carriage to the mines as 4s., making a total cost of 10s. per ton above the price at the port of shipment. On coke the freight would probably be 8s. per ton owing to the greater space occupied by that material, but this would not affect the land carriage, which, as in the case of coal, may be put at 4s., giving a total increased cost of 12s.

per ton; 2¼ cwts. of coke and ½ cwt. of coal being the maximum quantities of fuel necessary for concentrating 1 ton of ore, there will be the 8th of 12s., or 1s. 6d., and the 1-40th of 8s., or (say) 2½d. to add to the cost of concentration, or in round numbers an additional charge of 1s. 9d. per ton for the cost of local treatment when compared with that of South Wales. It will thus be seen that the fuel difficulty, like many another giant, dwarfs on investigation. Labour, which, after adding the extra fuel charge of 1s. 9d. per ton, still amounts to 40 per cent. of the total charge, would be an item in favour of local treatment. Making, however, no allowance for cheaper labour market, the cost of concentration in Cornwall should not exceed 6s. 6d. per ton, and with this figure, which is an outside one, as a basis the following calculation will show to what extent it is possible to improve the position of a great many of our Cornish mines. For this illustration an ore containing 4 per cent. of copper may be taken, 25 tons of which are necessary for producing 1 ton of metal; an ore of this produce should yield on concentration a regulus of not less than 20 per cent. of copper. When the value of 1 ton of copper contained in an ore of 4 per cent. is 40*l.*, the value of the same quantity of metal contained in an ore or regulus of 20 per cent. will be about 56*l.* 10s.; from the latter figure the cost of concentrating 25 tons of ore at 6s. 6d. per ton, 8*l.* 2s. 6d. must be deducted, which leaves a net value of 48*l.* 7s. 6d. per ton of ore copper contained in a produce of 20 per cent. against 40*l.* for the same quantity of copper contained in an ore of 4 per cent. In round numbers the increased produce gives an improved value of 8*l.* per ton of copper, or in the case of a produce of 4 per cent. an increase of 6s. 6d. per ton of ore, and in addition there will be the lesser quantity of produce to be conveyed from the mine to the port of shipment. This figure represents the minimum gain that would accrue from local treatment of low-grade copper ore, the cost of concentration having been put at a higher figure than would be found necessary when handling fairly large quantities, and the ley of the regulus having also been put at a moderate figure, and no allowance made for the fact that the slags would be cleaner—that is, would contain less metal than the slags from South Wales reverberatory furnace smelting. Although no credit is taken for this last important item, it would be found in practice that the gain under this head would fully pay the cost of concentration.

In the case of poor silver ores the benefit to be derived from a similar course of treatment would be considerably greater. An ore containing (say) 10 ozs. of silver per ton (and there are large quantities of ore now at surface at several of our mines, the contents of which are rather above than below this figure) would barely pay the cost of sampling, cartage, and freight to South Wales, but if properly concentrated 4s. an ounce could readily be obtained for the silver contents at a cost not exceeding 6s. 6d. per ton of ore, and in addition any copper that the ore may contain will be concentrated in the resulting matte or regulus, and will become an item of value. The cost of the plant necessary for concentrating poor copper and silver ores according to the foregoing plan will not exceed that necessary for bringing tin ore into a marketable condition, and this system of working stands in the same relation to copper mining as the stamping and burning of the ore does to tin mining. In the early days of Cornish copper mining rich deposits of ore were found at a comparatively shallow depth, and the price of copper was considerably higher than the rates ruling of late years, so that large profits were made from the mining of the ore, and there was very little inducement to copper miners to concern themselves with anything beyond the simple raising of the mineral. Besides, the treatment of copper ores was in the hands of a few who, in addition to keeping the details of their business secret, contrived to impress on the minds of those engaged in mining the belief that no advantage could accrue to the miner from going beyond the raising of the ore, a belief which has been obtained to the present day.

Not only have our mines become deeper and poorer, but the enormous foreign production which would certainly be increased by a rise in the price of copper makes it probable that the average value of that metal will be rather below than above the rates now ruling. It behoves those responsible for the management of mines raising low produce ores to adopt the only plan which will place such mines on a sound and paying basis, and mine adventurers will be only showing a due regard for their interests if they at once put a stop to the present method of disposing of their produce, a method which may be fairly likened to the sale by tin mines of the ore in the stone.

METALLURGIST.

LANGFORD COPPER AFD SILVER MINING COMPANY.

SIR,—In the Journal of October 22 the above mine was introduced to the public as an experiment of grafting the chief feature of the Cost-book upon Limited Liability. The company was of 25,000 shares at 10s. each, and the public were told that copper ore had been broken of 25 per cent. produce, and that it was considered that by a simple and inexpensive process a large quantity of silver and copper matte might be returned at a good profit, while an engine was in process of erection on the shaft. On Nov. 5 we were informed that without a single advertisement appealing to the general public 17,000 shares were applied for within a little more than a week, that the allotment had been fairly made, and that no more shares could be issued at par. At the statutory meeting held on Feb. 24 we were told that 18,178 shares had been allotted, leaving 6822 in reserve, but it was not stated if a premium had been received on the 1178 shares allotted between Nov. 5 and the date of the statutory meeting, although in the Journal of Oct. 29, 1881, there is the following note:—"No application for shares in Langford at par will be entertained after Monday, the 31st inst. After that time the price will be 10s. prem." From time to time notes of the progress of the mine appeared in the Journal, and of which the dates and particulars are as follows:—

Nov. 12, 1881.—So far the experiment on the refuse heaps at Langford is very successful.

Dec. 3.—After the experiment to which we referred a fortnight ago with the Langford ore some alterations had to be made in the furnaces; these are now completed, and we may hear more in a day or two.

Dec. 10.—Another trial has been made on the refuse ores at Langford, and very successfully. Indeed the agent is now satisfied that the process will answer. Some stuff with 9 ozs. of silver in it came out as a matte with 40 ozs. The directors are in treaty for the necessary machinery to work the mine vigorously.

Dec. 24.—Further experiments on the Langford halvans lead the agent to write that they prove to him we have a good and profitable concern.

Jan. 21.—So far as carried out the experiments on the poor ores are quite successful.

Feb. 18.—Mr. Doble informs the directors that so far as tested the experiments on the Langford poor ores are highly successful. He is satisfied they can be returned at a good profit.

On Feb. 25 it was stated that the estimated quantity of halvans or inferior silver ores was 10,000 tons. So far as experiments had gone mattee had been produced with 81 ozs. of silver and some at 40 ozs., the average being 55 ozs. The cost of returning a ton of ore is 10s. 6d., and it takes about seven weeks to make a ton of mattee, at a cost of 3*l.* 13s. 6d., and its value at the average of 55 ozs. of silver and 3 per cent. of copper, say 11*l.* per ton, so that there would be a large margin of profit.

March 18.—We have received this week the results of five experiments on the poor ores of Langford. Matte No. 1 contains 26 ozs. 2 dwts. 16 grs. of silver per ton; No. 2, 49 ozs.; No. 3, 32 ozs. 13 dwts.; No. 4, 65 ozs. 6 dwts. 16 grs.; and No. 5, 52 ozs. 5 dwts 8 grs. of silver per ton.

These, naturally enough, were considered very encouraging statements, and they were calculated—and no doubt written—to inspire confidence in the mine, but since the last-named date of March 18, there has not appeared any note whatever as to the progress of the company. I have heard that the silver experiments, the progress of which, up to March 18, was so regularly reported, are a failure, and one would like to know if this be true. I fear the worst, seeing that the shares are unsaleable. The company being limited, the shareholders are, of course, entirely in the hands of the directors, who may not think it expedient to afford any information before the annual general meeting. Under these circumstances, I hope it will not be considered unreasonable in me to ask to be informed, through the same source that supplied the statements I have quoted, what the real position (financially and generally) of the company is at the present moment, and what is proposed to be done if the silver experiments have really resulted in failure? ENQUIRER.

July 5.

NEW TERRAS MINE.

SIR,—On returning to-day from Newlyn (East) I met a man who knew all the proceedings of the old company. He said that the failure of the company was owing to mismanagement, and not to the want of tinstone. The miners were permitted to send to the stamping mill any kind of thing they met with, and he said that hundreds of tons of "meat earth," or soil, were passed through the stamps, mixed up with any rubbish that came in their way; whereas, to make the tinstone to pay, a "selection" should be made, and the non-paying part of the elvan course rejected. It is certain, judging from the experience of the past and from recent tests of the tinstone, that under judicious management good profits can be made from the development of the stanniferous elvan course, independently of the other lodes which intersect the sett. The executive have resolved to do justice to the property, and to the gentlemen who have invested their money in the enterprise, by the exercise of the strictest economy in carrying out the works. The first step to be taken is the purchase of a 36-in. cylinder engine and a battery of about 50 heads for the reduction of the tinstone, the laying out dressing-floors, the construction of a tramway for the transit of tinstone to the stamps, the erection of a stone-breaker, the building of a smithy, saw-house, and a few other ordinary works. Soon after these works are completed the company may reasonably expect that profits will be divisible amongst the shareholders, and thereupon the New Terras will appear in your list of dividend mines.

Truro, June 30. R. SYMONS.

[For remainder of Original Correspondence see Journal.]

SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE MINING INSTITUTE.

The monthly meeting of members was held on Monday (Mr. WM. FARNWORTH presiding). The meeting was held in the Mining Museum, Dudley, and there were present, among others, Messrs. H. Johnson, jun. (Vice-president), W. J. Davies, Jonah Davies, C. H. Treglown, Henry Johnson, sen., R. Latham, I. Foley, T. Oakes, T. H. Bailey, J. F. Addenbrooke, and Alexander Smith (secretary).

Mr. ALEXANDER SMITH, M.I.C.E. (secretary) explained that the proposed excursion to Cannock Chase to witness experiments with the Lime process of getting coal was held in abeyance, owing to the numerous engagements of the patentee. He also stated that the Transactions of the North of England Institute of Mining, as prepresented, had been bound.

Mr. H. JOHNSON, jun. (Vice-president), then read the following suggestive paper upon the Electric Light and the Utilisation of Small Coal at Collieries. Seeing the rage that has recently sprung up for electric light and telegraph companies it has occurred to me that as coal will undoubtedly be the prime producer (at any rate in the Midlands) of electricity, and as it has been proved beyond doubt possible to convey, without any appreciable loss, electricity very considerable distances, the motors or machinery for producing the current should be brought to the fuel, instead of as at present intended, taking the fuel to the motors, and thereby creating a consumption or demand for inferior and small coal at the collieries, and a consequent saving in many ways to the numerous electric light companies now coming into existence, as I propose to show in the following remarks:—If Edison can (and he says he can) utilise the power in the Falls of Niagara, by taking his motor to it, surely there would be no more, but considerable less, difficulty in electric light companies taking their motors to neighbouring collieries for the required power, no more difficulty than in utilising the power of the Severn or the other rivers, as proposed by many eminent men, for the purpose of driving the necessary machinery for producing the electric current, and afterwards conveying it scores of miles to distant towns and villages, seeing that it is a fact that there are at the present time conducting wires of very considerable length in operation, and giving every satisfaction. I submit there can be no objection raised against the suggestion on the score that the machinery for driving the dynamos must not be separated from the place of consumption by considerable distances. I would mention the following advantages in support of the suggestion, and in favour of the electric light companies adapting it:—

1. There would be no appreciable loss in transit from the dynamos to the place of consumption.—2. The reduced price of fuel at the pit's mouth as compared with the cost of the same conveyed from the pit to machinery in boroughs and towns.—3. Saving of cost of removal of boiler ashes to outside of boroughs and towns, and purchase or rent of land for deposit of the same.—4. Reduced cost of labour in colliery districts as compared with cost of labour in boroughs and towns.—5. Reduced cost of land for the erection of electric light plant adjoining a colliery as compared with the cost of the same in a borough or town, and reduced cost in erecting the same.—6. Saving in reduced rates and taxes as compared with the heavy demands at present being made in most boroughs and towns.—7. Reduced cost generally of an electric light plant outside as compared to one constructed inside a borough or town, by reason of the less costly design. And the following advantages, which would be in favour of the colliery owners:—1. It would create a constant demand for a class of fuel which cannot now be sold at a profit.—2. If electricity ever should take the place now being claimed for it, it would also be the means of prolonging the life of our coal fields, and tend to make mining what it ought to be—a reasonably profitable investment. It may be said there would be too much risk run by reason of strikes and lock-outs, and the supply of slack being suddenly and unexpectedly stopped; but the same objection would apply to works located inside a borough. I take it that a large reserve of fuel would be constantly in existence; and, further the works would be in communication by sidings with all the railway systems, so that should the supply of fuel fall off from some unavoidable cause the machinery would be kept going with fuel from other collieries till the regular supply was in operation again. I apprehend there would not be the least difficulty in an electric light company making satisfactory arrangements with any colliery proprietors outside a borough or town for the requisite land and railway facilities, and a constant supply, under all circumstances, of fuel for the constant driving of machinery of any power. It may be said that gas will be largely used for driving electric lighting machinery; but even if this be so I do not think, taking everything into consideration, as here suggested, that it will be as economic as this suggested method. I cannot but think that with suitably constructed boilers and firing apparatus millions of tons of small coal would be turned to a profitable account which under the circumstances is irreparably lost to owners and the nation. In conclusion, I venture to think that you will agree with me that this suggestion is well worth the careful consideration of the numerous electric light companies now so rapidly coming into existence before deciding on the position of their necessarily extensive and costly plant, which must ultimately be erected, and also the necessarily very costly maintenance of them in very large boroughs and towns.

Mr. TREGLOWN considered the paper a suggestive one, but had been unable to find any statistics upon the statement that electricity could be carried great distances without appreciable loss.——The VICE-PRESIDENT said he had no statistics, but he believed it could be done, and was being done at that moment.—Mr. J. DAVIES wondered what sort of plant would be required at a colliery to supply a large town with electricity. From what he had seen it required heavy machinery to produce the electric light.—The SECRETARY agreed that something further would have to be done to simplify the production of electricity before its use would be general.—Mr. BAILEY showed that cost was a factor against the light.—A hearty vote of thanks was given to the Vice-president for his paper, and then the President read some remarks from Knowledge, showing, on the authority of Prof. Abel, that whilst fine coal dust might help to augment an explosion, it did not cause an explosion unless there was fire-damp in connection with it.—Mr. JOHNSON, sen., and others concurred with this view.

INTERESTING MINING ENGINEERING PAPERS.

At a meeting of members of the Manchester Geological Society held last week at Wigan, Mr. GEORGE GILROY, the President, occupying the chair, the programme of subjects for discussion was essentially one devoted to matters interesting to mining engineers, of whom there was a numerous attendance.

THE MECHANICAL VENTILATION OF MINES.

Mr. CHARLES COCKSON, M.E., read a paper on "Centrifugal fans, their relative efficiency and useful effect." The question as to which was the most efficient and economical method of ventilation had, said the reader of the paper, been so often discussed during the last 20 years that the subject would seem to have been almost exhausted. As a matter of fact, however, he thought it must be admitted that this was very far from being the case, and the results of the most recent investigations only showed that this question, which was of the greatest importance to all persons interested in mining matters, was still undecided. Looking through the proceedings of our Mining Institutes we found that soon after the introduction of mechanical ventilators on a large scale into the country the question discussed was as to the advantages or disadvantages of mechanical, as compared with furnace, ventilation, and the fear of a breakdown of the machinery causing a stoppage of the ventilation appeared to influence many in their adherence to the old furnace system. Nowadays, however, it had become more a question as to which was the best mechanical ventilator, and the great majority of engineers had become convinced that on the ground of safety and efficiency, mechanical was greatly preferable to furnace ventilation, and that at our present working depths it was also the most economical. It was not, therefore, his intention to say anything as to the work done by furnaces, as nearly everyone was agreed as to the superiority of mechanical ventilation of one kind or another. Taking the report of the North of England Fan Committee as their guide, they found that all the ventilators described in it might be divided into two clearly distinct classes, the first consisting of the Waddle, Guibal, and Schiele, which were centrifugal ventilators, and the second consisting of those machines which were known as varying capacity ventilators, and acted after the manner of an air-pump. The latter class in his opinion were not at all suited for the enormous volumes of air which were required for the ventilation of our collieries at the present day. The objections to this class of ventilators were—first, that they were much more complicated machines than the centrifugal fans; second, that their efficiency was greatly dependent upon the accurate fitting of the working parts; third, that at a certain speed they could only pass a certain quantity of air, and in his opinion this class of ventilator could not be run with safety at a sufficiently great number of revolutions to pass the quantity of air being turned out by some Guibal fans of from 250,000 to 300,000 cubic feet per minute. It would he thought be a mechanical impossibility to produce this volume of air by any variable capacity machine, and with this type of ventilation they would not reap the advantage of large shafts and good airways. Another objection was that in the case of a break down there was no air passage through the machine, which necessitated the construction of other outlets, which could be opened in case of stoppage. Then these fans, with the conditions of the mine remaining the same, did not, as was secured with the best centrifugal fans, produce a certain fixed amount of air per revolution as the speed increased. With a centrifugal fan, if a very heavy fall took place in an inroad so as to decrease the quantity of air, it would at once lessen the work of the fan, which would work more quickly, thus tending automatically to restore the ventilation to its original volume, but with the varying capacity machines the same fall would tend to increase the re-entry of air, and thus decrease the volume of air in the mine. But perhaps the most convincing argument as to the superiority of the centrifugal ventilators was the simple fact that while the varying capacity machines at work in this country might, he believed, be counted on one's fingers, of the Guibal alone there were between 250 and 300 at work, and on the Continent, where all types of ventilators had been more fully tried than with us, the centrifugal ventilator was now being put up practically to the exclusion of all other types. Turning now specially to the centrifugal fans, and keeping the North of England report as their guide, he would endeavour to determine which of the three types, the Guibal, Waddle, and Schiele were giving the best results.

Taking the useful effects, results as calculated in the usual way, as shown by trials at several collieries, there was little to indicate that any one fan was superior to the other. In these tests, however, the fans had not been working under the same conditions which was essential for a fair comparison. As it was impossible to secure this with their present experiments, let them turn to one or two other points, which in his opinion were almost as important as the question of the percentage of steam utilised. In order to do this they must consider what the work of a fan was. Primarily, of course, its work was to produce a ventilating current in the mine, and in order to do this it must decrease the pressure of air in the upcast column as to induce this current due to the greater pressure of air in the downcast column acting in accordance with exactly the same laws as furnace ventilation. As they could calculate the ventilating pressure which a furnace would give when they got a certain temperature of air in the upcast column, so could they calculate what ventilatory pressure could be produced by a fan running at any speed. Since the quantity of air in a mine depended upon the ventilating pressure or water gauge that a fan could produce, the question as to which type of fan was able to produce the greatest water gauge was one of great importance, because it might be said that the fan which at a certain speed could give the greatest water gauge was the most efficient ventilator. In order to arrive at some standard by which to compare the fans as to their efficiency in this respect they must consider what theoretically a fan should do, and then they would see how they compared with this theoretical perfection. In all centrifugal fans with radial blades they might consider that the air travelled the fan at the speed at which the tips of the blades were travelling. Air, like all other bodies, whether solid or gaseous, when raised to a certain speed had a certain amount of work stored in it, and this work was nearly all lost by open running fans, or fans which had not a close fitting casting. If they could utilise any of this stored up work by lessening the velocity of the air before discharging it into the atmosphere they would increase their vacuum, and also the useful effect of the fan, and it was to gain this result that the expanding chimney was devised by M. Guibal and added to his fan. If all this stored up work could be utilised, and the fan caused no friction to the air in passing through it they would arrive at what a perfect fan could produce. Comparing the fans reported upon by the North of England Committee on this basis, they would find the Guibal fan at the head of the list with regard to water gauge efficiency. In order, however, to take a fairer average he had worked out the percentage of efficiency in this respect of some six Guibal's, three Waddles, and five Schiele's of whose working he had particulars, and averaging the results he found that they gave the following comparison:—

Guibal's	64·5	of efficiency with regard to water gauge produced.
Waddle's	44·78	
Schiele	34·54	

Taking this as a fair basis for calculation they could find out approximately what each of the three types of fans would do at the same or different speeds, and taking 9000 ft. per minute of periphery speed as being about the limit of safe working speed of fans of such dimensions as would pass large volumes of air, they found that at this same speed they would give the following results:—

	Water Gauge.		Air per minute.	
Guibal's	6·61	inches.	240,000	cubic feet.
Waddle	4·59	"	156,780	"
Schiele	3·53	"	146,160	"

This showed that if the fans were all working under similar conditions, and at the same speed of periphery, the Waddle would give 16·6 per cent., and the Schiele 26·9 per cent. less air than the Guibal; or, putting it in another form, they found that to produce the same

amount of air the Waddle would have to run at 20 per cent. and the Schiele at 36·6 per cent. greater speed than the Guibal, so that whatever the result as to the useful effect calculation, they might say that as a matter of efficiency with regard to the speed of the fans that the Guibal was the most efficient. The test as to the water gauge produced was one of great importance, and would, he hoped, be of service to persons who might be thinking of changing from furnace to fan ventilation.

Mr. WM. BRYHAM, in proposing a vote of thanks to the reader of the paper, said he was sorry that the question of furnace as compared with mechanical ventilation had not been gone into a little more. Although he was prepared to admit that the time was coming when mechanical ventilation would be more applied than it had been, he scarcely thought the time had yet arrived when mechanical ventilation could be said under certain conditions to be altogether superior to furnace ventilation. Comparisons had been made of the two systems under certain conditions, but he hoped the reading of the paper would lead to a further consideration of the important question of mechanical ventilation.

Mr. G. F. CRANKE, in seconding the vote of thanks, said the subject was one of great interest, and he thought it would be advisable to have the paper printed and in the hands of members, and the discussion adjourned until then.

Mr. C. M. PERCY thought the discussion should be resumed at a meeting held in Wigan, in which case he would prepare a set of diagrams which would illustrate the working of the several fans referred to. So far as he had understood Mr. Cockson there were some points to which he should take objection.

Other members having also expressed a wish that the adjourned discussion might take place in Wigan, the hon. secretary (Mr. J. S. MARTIN) said he should be glad to forward the wish so expressed as much as possible.

The vote of thanks having been unanimously passed, Mr. COCKSON, in responding, said he did not mean to assert that fan or mechanical ventilation was under all circumstances preferable to furnace ventilation. At certain depths furnace ventilation was found to be more economical than mechanical ventilation. This was a point which could be worked out by taking the water gauge efficiency, but the question of safety was another point.

On the suggestion of the CHAIRMAN the further discussion of the subject was then adjourned until the paper had been printed and supplied to the members.

SAFETY-LAMPS IN MINES.

This question, which has occupied the attention of the Society at several previous meetings, again came forward for discussion.

Mr. TEALE who had read a paper, an abstract of which appeared some time back, on the Safe Lighting of Collieries, replied to certain points of criticism which had been raised, and contended that the more free a lamp was from carbonic acid gas the more liable it was to explode; and with regard to the objections which had been raised to the Mueseler type of lamp, the best answer was that both in thick seams and thin seams, and in all conceivable ways, the lamps in many thousands were in use. With regard to the oil used in his Protector lamps giving off a blue cast, he had frequently demonstrated that this was not the case, and should be most happy to do so again.

Mr. GRIMBLE asked whether there was not more danger in the storage of this oil?——Mr. TEALE said there was more safety in the use of this oil than in other oils, and in reply to other questions said that extra evaporation in warm seams could be avoided by properly reducing the flame. Perhaps the lamp might not in some cases be so serviceable in seeking after gas, and if plunged into the midst of gas the light would go out in a few seconds, where the Davy would last longer. The Mueseler had, however, been found a very efficient lamp to test with, and by altering the lamp to make the light more tenacious, which could be readily done, they had as good a lamp as they could have for testing gas.

Mr. HALL, Inspector of Mines, said he had heard it stated that in a warm mine these lamps occasionally gave up a certain amount of vapour which took fire in the lamps.

Mr. TEALE: In an altered lamp there might be an evaporation through the feed-hole, which might puff off and put out the light, but under ordinary conditions it could not occur in the lamp.

Mr. S. GILROY observed that in the Mueseler type of lamp the margin of safety consisted of a very brittle substance, and there was, he thought, a great probability of the glass being burst. They wanted a new departure in the lamp question altogether; they wanted a lamp without heat and without flame.

Mr. BURROWS, who said that a large number of the lamps were in use at their pits, had seen the glass cracked but not burst by changes of heat.

Mr. W. PICKARD observed that even if the glass were cracked they still had a safe lamp.

Mr. TEALE said a burst lamp had never been brought under his observation, and he had never been able to burst one by explosion to such an extent as to separate the glass and expose the light.

Mr. HILTON, of the Wigan Coal and Iron Company, said they had a number of the Mueseler lamps in use at their pits, and he had made special experiments with the view of testing the lamps in this particular respect. He had submitted two of them to a temperature of 212° and then suddenly thrown cold water upon them at a temperature of 50°; the glass was cracked but not burst to such an extent as to make the lamp unsafe. When subjected to the high temperature the light went out without explosion. They had had a good many lamps cracked, but very few broken in the pit, and this had been from blows with a pick.

Mr. GRIMBLE had seen the flame of a Mueseler pass into the upper gauge, and burn there just the same as in a Davy. In that case the lamp was no better than the Davy. He might add, however, that this was under peculiar circumstances. The lamp was placed partly below a foot ridding with the air passing on the top of the lamp, and the gas coming against it underneath.

Mr. HILTON said he had not had a single case where the flame had passed through the horizontal gauze or the chimney; he knew, however, that this could be done under certain conditions.

Mr. BURROWS had never seen the flame go up the chimney.

Mr. HOLLINGSWORTH said that by baffling the air in the course of experiments, the Mueseler had been exploded.

Mr. BURROWS said that although he did not consider the lamp a perfect one, it was the best he had seen.

Mr. HALL, Inspector of Mines, next re-introduced the question of the tin-can lamp, specimens of which he had exhibited at a previous meeting. In that district they were in this position; they had always used the Davy, and they were now told that this lamp was not safe. To meet that difficulty a shield was provided, which made the Davy into a tin-can lamp. This was a lamp which had never been exploded as yet, and it was one which he thought would be worth bringing before their notice. Mr. Clarke had said that he preferred a lamp which went out in the gas, but there was this objection to the Mueseler lamp, that men would be discouraged from testing their places for gas, and it would not be suitable for an official who would be inclined not to try places for gas for fear of putting out his light. Some other gentlemen objected to the tin-can lamp because it did not give sufficient light. He did not himself wish to criticise the different lamps. The more they were discussed the more likely were they to get at the safest lamps, and those who were responsible for the lamps were the best men to judge of them.

The CHAIRMAN observed that some objection had been raised as to the collection of dust in the tin-can lamp.

Mr. HALL said he had made enquiries on this point, and found that some difficulty had been raised in consequence of the dust, but this might be met by the fireman being enabled to remove the shield and clean it.

Mr. W. TOPPING said he had been using 400 of these lamps for some time, and he had not found the slightest difficulty with regard to the collection of dust. Where they had sufficient space between the tin-can and the lamps their was no accumulation of dust.

The CHAIRMAN: You do not see any objection to having more space between the tin and the lamp?——Mr. TOPPING: This does not affect the safety of the lamp; this depended upon the manner in which the holes are placed at the bottom of the shield.

Mr. WM. PICKARD said he still maintained the objection he first raised that the tin-can was not a safe lamp, whilst it gave less illuminating power than the ordinary Davy. It was not fair of an employer to demand clean coal if he did not give the collier a good light. He would not work again in a mine with a Davy. Under ordinary circumstances a Davy would no doubt be safe enough, but it was the extraordinary circumstances against which they had to guard. The Mueseler was a much preferable lamp.

Mr. WM. BRYHAM wished to say just one or two words in favour of the poor old Davy. It had undergone so many changes or additions, until at last it had become coated all round. He thought the tin-can was as safe a lamp as could be made out of the Davy, and might be largely used with great safety. What colliery proprietors desired to know was which was a safe lamp. At present they were in a state of suspense, one day being told that a certain lamp was safe, and the next day that it was dangerous. He, for one, should like to know what conclusion the Royal Commissioners on Mine Explosions had come to with regard to this matter. The Mueseler, under certain conditions, was no doubt the best lamp. It was not, however, the ordinary state of the mine, but with extraordinary conditions, which might possibly only arise once or twice in the whole life of a mine, against which they had to guard. He was rather in favour of the tin-can lamp; it might be a workable and he believed a safe lamp.

Mr. TOPPING contended that there was no deficiency of light with the tin-can lamp; the tin-can, in fact, if properly constructed, became a kind of reflector, and with proper supervision they could get a better light with the tin-can lamp.

Mr. PICKARD, in answer to the CHAIRMAN, admitted that the tin-can lamp was an improvement in some respects, but with these improvements they added defects.

Mr. BETLEY said that the result of experiments showed that in the ordinary Davy two-thirds of the light was absorbed by the gauze. He had tried a Davy with the tin-can, and the loss of light due to the glass alone was 14 per cent., and that might be taken as the loss by the glass cylinder by the Mueseler or the Clanny. He thought, however, that the extra loss of light caused by the tin-can would be more than compensated during the day's work by the protection afforded to the gauze against being choked up by dust.

Mr. GRIMBLE said that with a proper intake and outlet of air the tin-can lamp with a glass cylinder gave a better light than the ordinary lamp.

Mr. TEALE said the tin can lamp had been known for many years, and the tin cans had been simply introduced in the first place to protect the lamps from injury. If there was any special feature of safety in connection with the tin-can lamp then he would urge that they should put a tin-can round a Stevenson, and they would get much better results as to light.

After some further discussion the proceedings closed with the usual votes of thanks.

RAILWAYS AND MINING IN SOUTH AUSTRALIA.

The past week may be said to have been the commencement of a new era in connection with our railways, and the revival of an old one in connection with mining. On May 17 the line extending 200 miles northwards from Port Augusta to the little township—misnamed "Farina," as it is far beyond the limit of wheat growing—was opened for public traffic by his Excellency the Governor, accompanied by the members of the Ministry, many members of both houses of the Legislature, and about 300 invited guests. The party left Adelaide by special train the previous day, as the opening ceremony was to take place at 1 p.m. on the 17th at Quorn, a new but considerable town, about 25 miles north of Port Augusta, and forming the junction where the Burra line joins that from Port Augusta. A portion of the party were accommodated at the Port, and the remainder at Quorn. I shall not occupy your space by giving an extended account of the addresses presented to the Governor, or of the speeches delivered at the banquet, but you will see these in the Adelaide papers. I propose to notice the salient points in the speeches. The Commissioner of Public Works (Hon. J. G. Ramsay, M.L.C.) presided at the banquet, supported on the right by his Excellency Sir W. F. D. Jervois, K.C.B.G., and on the left by the Chief Secretary, Hon. J. C. Bray, M.P. The caterer was Mr. F. D. Beach, and he provided a banquet that astonished everyone by its excellence and the completeness of all the arrangements, especially considering that everything had to be conveyed to the place 230 miles by train. His Excellency spoke well of the great importance of opening up the country by means of railways, and alluded to the fact that the metropolis was now brought into communication with Port Augusta by rail and also with Farina, a point 430 miles from Adelaide. A large extent of agricultural and mineral country is drained by this line, and many new townships have sprung up along the route. The Chief Secretary, the Hon J. C. Bray, made an excellent speech, referring to that railway as the first section of a line intended to cross the continent to Port Darwin, with branches to Queensland and New South Wales. He spoke of the importance of water conservation, and the satisfaction he felt in the vote of the House to expend 250,000*l.* for this purpose. The recent visit of the Minister of Education to the Northern Territory had convinced them of the policy of expending money in developing the valuable resources of that important portion of the province, and they were sending next week a survey party to Port Darwin to determine the best route for the railway. He hoped to bring forward a bill next session for the construction of a line 150 miles in length from Port Darwin to Pine Creek. They were gradually waking up to the belief that the Northern Territory would soon cease to be the burden it had been on the Government, and would ere long become a source of profit. Then they contemplated extending their railways to the border of Victoria, and such extension he believed would have the effect of still further improving the advantages of our geographical position in relation to the other colonies. Referring to the offer of English capitalists to construct the Trans-continental Railway he expressed his belief that if it was worth anyone's while to make it, it was worth their while to do so themselves. (Cheers.)

Sir Henry Ayers, M.L.C., responded on behalf of the Legislative Council to the toast of the Parliament, and Mr. W. Townsend, M.P., on behalf of the lower House.

His Excellency Sir W. F. D. Jervois, in a capital speech proposed "Success to the Orroroo, Quorn, and Farina Railways." He was entirely in accord with the Ministry in their railway policy as foreshadowed by the Chief Secretary. His Excellency proceeded to take a comprehensive view of the Colony, urging that one portion with its wants should not be considered apart from other portions in matters of railway communication, and the development of their resources. They should remember, too, that the seaboard of South Australia was not confined to Port Adelaide, but extended from Port Augusta to Port Adelaide and to Port Victor and Encounter Bay. [We might add and to the Glenelg River eastward to the Victorian boundary, and beyond Fowler's Bay to the border of Western Australia.] He considered that South Australia possessed an enormous advantage over some of the other colonies in the immense extent of her seaboard. He looked upon the proposed line of railway to the northern territory and Queensland as one of the greatest importance to this colony. It would practically annex the south-western portion of Queensland to South Australia, while the line to the Barrier ranges would in the same way practically annex the north-western part of New South Wales. Then there was the question of railway connection with Victoria, and on that he also agreed with the plan indicated by the Chief Secretary to carry the present line on from Nairne, across the Murray bridge and the 90-mile desert to Victoria. The bridge at present was of little use, but it was just in the right track, and if they made the railway he believed they would find that land in the desert would be cultivated. Then they would have railway communication established with Melbourne, Sydney, and ultimately with Brisbane. He would like to see the Trans-continental railway also carried out. When, some four years ago, he spoke of it in England, he was almost met with derision, but he referred to the San Francisco Railway across the Continent of America, and to the results that had followed its construction, and he thought they might do a similar thing in South Australia. He would like to see the line pushed on from Port Darwin and from Farina (its present terminus in the north), so that being advanced from both ends it should eventually be completed in the centre. He considered railways absolutely essential to the country. It would be a grand country with railway communication but nothing without. They might have to bide their time before they would actually pay, but he believed the returns from the very start would be much better than they imagined. Railways would have an immense influence in bringing about the federation of the colonies, and would do more than all their preaching on the subject. His Excellency then proposed the toast and called for three cheers for the railway, which were very heartily given.

The Chairman, in responding to the toast, said he was happy to inform them that the railways were paying. The revenue derived from them last year was 418,000*l.* in round numbers, and that left 3½ per cent. on the capital, after paying all working expenses, and the cost of management. (Cheers.) This year, notwithstanding the late bad harvest, and the reduction in rates, the gross revenue from the railways would be 25,000*l.* more than last year. As the cost of working and management was being minimised, it did not increase in the same ratio as the returns, so that they hoped before long the railways would pay the full interest on their cost, besides affording such great advantages to the colony. The Government had reduced the rates by about one-third of what they were six months ago, and had regulated them by a sliding scale according to distance. They had not only reduced the rates for carrying wheat, but for minerals also, and they hoped the mining interest would feel the benefit of the change. The rates on wool had been reduced 15 per cent. to encourage the carriage for long distances by rail. The Government were so satisfied that the revenue would be maintained that they proposed to make a reduction also on general merchandise—5 per cent. for the first 100 miles, 10 per cent. for 150 miles, 15 per cent. for 200 miles, and 20 per cent. for all distances over 300 miles. (Cheers.) They also intended to reduce the passenger fares, and abolish third-class fares. The general reduction would be something like a third all round. (Cheers.)

Mr. A. Tennant, M.P., proposed the combined interests of South Australia—the agricultural, pastoral, and mineral. These were responded to by three several representatives. Mr. E. Cooke, M.P., manager of the E. and A. Copper Company, Port Adelaide, in responding for the mineral interest referred to the prospect of a revival of mining, especially in the North, now that the railway was available for carrying their ore. He urged the Government by every possible means to encourage the mining industry.

The Health of the Engineer-in-Chief, Mr. H. C. Mais, having been duly honoured, the company soon left the banquet-hall, and proceed northwards to Beltana, where they stopped the night in order to go to Farina, the present terminus of the line, and return by day light.

The Corporation of South Australian Copper Mines invited a select but considerable number of gentlemen to witness the starting of the new machinery at the Blinman Mine on May 20, and they were conveyed to the place in a number of wagonettes from the Parachilna Railway station. A pleasant drive of 26 miles through grand and romantic scenery terminated at Blinman just before dark.

The Blinman Copper Mine is 130 miles north of Port Augusta, and about 26 miles north-east from the Parachilna Station, on the line of railway to Farina. The affair was carried out with great *eclat*, and was cleverly arranged so that a number of visitors who took part in the opening of the Farina Railway were present at the starting of the new engine and crushing machinery at Blinman. It is about 22 years since public attention was first directed to the mineral wealth of the Far North, and a number of sections were taken up and some little test work done on a few of them. Shortly afterwards a strong company was formed in London to work several of these mines in a more regular and systematic manner. Mr. Henry Martin had a great deal to do with starting the company, and held a large interest in it. The chief mines which they opened up were the Blinman, the Yudanamutana, about 120 miles further north, and the Mount Rose Mine, some 30 miles south-east of Yudanamutana. Large and rich deposits of ore were found on these three mines, and a considerable quantity of ore was sent down to Port Augusta, the rates of carriage varying from 5*l.* to 12*l.* per ton; or for the double journey—taking stores up and bringing ore down—9*l.* to 20*l.* per ton. No ore of less value than 30 per cent. was deemed rich enough to stand this rate of carriage, and even then the price of copper being higher than now was what enabled the mines to pay for a time. Subsequently, as copper fell in price, it was found impossible to clear expenses, and the mines were "knacked." But before this took place strenuous efforts were made to provide greater facilities for the transport of the ore; a Northern Railway League had, indeed, been formed previously, and endeavours were made to induce the Government to grant concessions to an English Company, who were prepared to construct a line of railway to the Far North, but these efforts were fruitless. Traction engines were imported by the Yudanamutana Mining Company, but they did not work well. For about 10 years these mines have been idle, but now the new and powerful English company, "The Corporation of South Australian Copper Mines," intend working them with vigour, and are making all possible arrangements for the introduction of the best ore-dressing machinery, and for the prosecution of the work with economy as well as vigour. They contemplete the construction of a light railway, like the Festiniog railway in Wales, on a 2-ft. gauge, to convey the ore to the Government railway at Parachilna. But we must proceed to describe the mines, whose resuscitation was made the occasion for a pleasing ceremony on May 20. The original discovery of ore on the Blinman Mine was on a low hill about 90 ft. above the creek which runs through the present township, and a lode showing a strong back of gossan, clay, slate, and ironstone was found, having a north and south course, and carrying green carbonates and grey oxide of copper. A very few feet below this back—as is common with lodes in the North—a fine course of rich copper ore was opened up; it was 7 or 8 ft. in width, of splendid ore, worth 40 per cent. of pure copper. Five shafts were sunk on this lode within a space of about 60 fms., from north to south. The course of ore above mentioned was carried down in the main shaft to about 15 fms., and many hundreds of tons were raised and sent away. Levels were driven at 15, 25, 35, and 45 fms., but the lode became poorer, and the oxides began to give way to sulphides. Nevertheless, had there been proper appliances for dressing there were—and are still at grass—thousands of tons of stuff worth about 5 per cent. of copper, and which can easily be dressed up to 20 per cent. by the new machinery. On descending the mine the immense chasms left from the old workings show that a vast amount of work has been done. At 50 fms. good solid yellow sulphide, worth nearly 30 per cent., has been cut, and, in the captain's opinion, this is a good guarantee for the successful future of the mine. Underneath where the best ore was found on the surface a counter lode has been cut at the 25 fm. level, and as it also carries good ore, it is being opened up with every hope of its developing an important feature in the mine. The country consists of good killas, requiring scarcely any timbering, yet not hard to work, and there is a great width of ore-bearing stuff, which, though rather dredgy, can be very easily dressed, and the sulphide ore it carries is of a high percentage—say, 25 to 29. The depth of the main engine-shaft, now called Masey's is 60 fms. Having given this description of the mine, we may proceed to briefly mention the opening ceremony. The new engine, which was part of the plant of the old Prince Alfred Mine, had been put up in the new engine-house at Blinman by Mr. Tippett, a well-known mining engineer. Its nominal power is about 45 horse power. Everything being in readiness, the Hon. J. Carr, M.P., Chairman of the company; Messrs. Masey (London), E. Cooke, M.P., David Murray, and V. Lawrance, directors; the Hons. J. Dunn and W. Sandover, M.L.C.'s; A. Tennant, M.P., Jas. Harvey, J.P., A. Gooch, J.P., T. Young, J.P., J. G. Pitcher (manager Town and Country Bank), A. Crooks (manager Commercial Bank), J. B. Austin, W. W. Gall, T. C. Brown, the Ven. Archdeacon Dove, M.A., Mr. Buttfield, S.M., and several others assembled in the engine-room. The Hon. J. Carr, M.P., then introduced Mrs. Masey (the wife of the London director), who, he said, had kindly consented to start the engine. Mrs. Masey then turned the handle and said—"This engine is now in perfect working order, and I hope it will long work with excellent results at this mine." Three hearty cheers were then given for Mrs. Masey, for Mr. Masey, and their son, who was present, followed by cheers for Mr. Carr and the other directors, for the engineer, the captain, and the mine. The engine worked well, pumping a good stream of water into the tank, which supplies the dressing machinery, and also turning the crushing rollers.

An adjournment was then made to the banqueting-room, where about 60 persons, amongst whom were Mrs. Masey, Mrs. Buttfield, and Mrs. Salter, sat down to an excellent spread, provided by Mr. Barnes, of the North Blinman Hotel. The Hon. J. Carr, M.P., presided, supporting by the Ven. Archdeacon Dove and the Hon. W. Sandover, M.L.C. Mr. David Murray, J.P., occupied the vice-chair. The usual loyal toasts having been duly honoured, Mr. V. Lawrance, J.P., proposed "The Legislature," taking the opportunity of reviewing the history of mining in the North in terms similar to those in which we have described it above. He mentioned the names of Messrs. N. V. Squarey, R. A. Fiveash, A. D. Tassie, J. B. Austin, and himself as having been the most active members of the Railway League, and of Mr. Squarey's commencement of working the Mount Rose Mine. Also of the action taken by the late Hon. Thomas Reynolds, M.P. to induce the Government to construct a railway to the North. But, he said, the honour of bringing matters to a head was reserved to their worthy Chairman (the Hon. J. Carr), who, as Comissioner of Crown Lands, in 1876 introduced the measure which had eventuated in the construction of the line the opening of which they had witnessed on Wednesday. The re-opening of the mine was due to the construction of the railway, and he believed it would prove of great benefit to the country. If they could induce the Government to assist them in bridging over the gap of 26 miles between the mine and Parachilna they might ere long be able to come by rail all the way from Adelaide to Blinman. The toast having been heartily drunk, was responded to by the Hons. W. Sandover and John Dunn, M.L.C.'s, Andrew Tennant and E. Cooke, M.P.'s.

The Chairman then proposed "The London Board of Directors and the English Shareholders, who found the capital," coupled with the name of Mr. Masey, who represented the London Board on that occasion.

Mr. Masey responded in what was decidedly the speech of the occasion. Our limited space compels us to give only a brief summary of what he said. He spoke of mining in the colony labouring under some disadvantage, because of the wonderful richness of the Burra and Moonta Mines, which caused a feeling of disappointment in the minds of many persons if mines in which they were interested did not turn out as good. It was too often the case that when capital was most wanted to develope a mine it was not forthcoming, because people expected mines to pay almost from the commencement. But that was not the proper course to pursue; the earth would not yield its mineral wealth without

time, capital, labour, and experience, being brought to bear, and if they were properly employed he believed few enterprises would pay better than mining. He had purchased the Blinman Mine and had transferred his interest in it to the Corporation in which he held a large number of shares. He was of opinion that they had only just begun to find the richest part of the Blinman Mine below the 40 where they had come on the rich sulphuret ores. The poorer ore had been accumulating for years for want of dressing machinery, and there were 10,000 to 11,000 tons on the surface and 3000 tons more broken out down in the mine ready to be operated upon, so that they had work for their crushing and dressing machinery for a year at least, and they estimated the profit on the poor ore from 10,000*l.* to 15,000*l.* Besides dressing the poor ore for market they would continue the regular work of the mine, and hoped in future to be able to keep up a monthly output of from 200 to 250 tons of 20 per cent. ore, which at the present price of copper would give a substantial return. The Corporation had also several other mines, and one in the immediate neighbourhood he considered a very promising property; the ore already raised from that mine (the Wheal Friendship) had sold for 19*l.* per ton. He thought very highly of the Yudanamutana Mine and the Mount Rose. Capt. Gribble had just brought down a specimen of ore from the latter mine containing 60 per cent. of copper, and worth about 40*l.* per ton. The Gammon Creek ore was assayed at the value of 25*l.* per ton. The Vocavockina was equally rich, but Capt. Gribble had found another which he thought the best of all, and which he called the Champion Mine. The ore from it was worth 45 per cent. They had several other mines of great richness, and expected to derive great wealth from their enterprise. Their great drawback was the want of a tram or branch railway to carry the ore to the main line. They had set engineers to work to survey a line from Blinman to Parachilna, and if the Government would deal liberally with the Corporation he promised they would construct the line. He believed the future mining districts of this colony would be in the neighbourhood of Yudanamutana and Mount Rose. Dr. Ulrich had spoken highly of the geological features of that part of the country, especially as to its quartz reefs, and on a recent visit there he himself found men who had been getting out gold for a year past. He thought it would be a good thing if the Government had a geological survey of the country made. (Hear, hear.) They could not travel for 3 or 4 miles over those hills in the North without seeing indications of mineral wealth. It appeared to him that while large fortunes had been realised in pastoral pursuits, the principal source of wealth had been comparatively neglected in the mineral resources of the colony. Sir Thomas Elder might be surprised to learn that his sheep had been grazing over a mine of nickel near Mount Lyndhurst, for which 50,000*l.* had been asked. The Mount Rose Mine had been valued at 30,000*l.*, and the Yudanamutana at 70,000*l.*, and all these mines were in the vast extent of Sir T. Elder's runs. He thought the large capitalists would have done well to have expended a few thousands in searching for mineral wealth. After a few further remarks, Mr. Masey proposed "The Colonial Committee and the Officers of the Corporation in the Colony."

The Chairman then proposed "The Visitors," which was responded to by the Ven. Archdeacon Dove in a neat speech.

Mr. J. B. Austin, being also called on, mentioned a few facts in connection with the Northern Mines, that when he saw the fine piles of rich ore at Yudanamutana nearly 20 years ago, and the well-defined lodes traceable on the surface for two miles in length, he estimated that if the mine were in full work 10,000 tons of 25 per cent. ore per annum might be raised. He had seen a block of ore weighing 5 tons carted away from that mine which assayed 42 per cent. From the Blinman he had seen a block of 2½ tons worth 40 per cent., and on the Daly Mine, near Yudanamutana, he had seen a block of solid grey ore of 60 per cent., and weighing about 3 tons. From another mine 600 tons of 40 per cent. ore had been quarried from the top of a hill. Other minerals, as nickel, galena, and silver, were also found in the North, and his belief was that as yet they were only on the threshold of the development of their mineral resources.

Mr. J. G. Pitcher was also called upon, and mentioned that in his efforts to promote the construction of the Trans-continental Railway he was only anxious to promote the welfare of the colony, and especially the mining interest.—Messrs. J. Harvey, J.P., T. Young, J.P., and J. Williams also spoke.—The toasts of "The Engineer," "The Ladies," and "The Press," were also honoured, and a very successful meeting terminated.—*Adelaide, May* 25.

ENGINES AND PORTABLE RAILWAYS FOR NEW MINE DISTRICTS.

At next week's Royal Agricultural Society Show, at Reading, Messrs. John Fowler and Co., of Leeds, will exhibit specimens of most of their principle varieties of agricultural engines and implements, and the descriptive list which they have prepared will prove useful not only to those visiting the show, but to many entirely unconnected with agriculture, since it permits of an opinion being formed of their patent compound semi-portable engines, one of which is exhibited, and which have been highly approved in various kinds of stationary work, and of their portable railway, of which a collection of models is shown. The general form of their engine has not been changed for a number of years. But some important improvements have been introduced which increase the efficiency and durability of the apparatus. The general application of steel in all parts of the engine liable to breakage and wear has greatly increased the strength without increasing the weight. The boilers of the larger description have been improved by the introduction of double riveting.

The semi-portable engines in combination with boilers on the compound principle are worthy of special notice. The advantage of a high degree of expansion for engines working with a high initial steam pressure is too well known to require much explanation; but the unavoidable complication of a valve gear, with a very early cut off, combined with a reversing gear and the necessity of starting (especially agricultural and steam-ploughing engines) readily in any position of the crank, have hitherto prevented such engines from being generally employed. Messrs. Fowler and Co. claim that these drawbacks are entirely avoided by their patent compound engines, which give the highest desirable degree of expansion, with the ordinary reversing valve gear, entirely avoid the excessive shocks to which a highly-expansive engine of the ordinary type is exposed, and can be started in any position of the crank as readily as an ordinary double cylinder engine, by admitting the high-pressure steam to the low-pressure cylinder for a stroke or two, during which time the engine works like an ordinary double cylinder engine. The latter advantage is obtained by a small valve, which opens a direct communication between the steam-chests of the two cylinders, so that, when open high-pressure steam is admitted into the low-pressure cylinder as well, and the engine works for a moment similar to a double cylinder engine. This valve acts independently of the starting lever, and need only be used when the engine is heavily loaded at starting.

The saving in water and coal of these engines as compared with the best high-pressure engines of the ordinary type is considerable, being from not less than 30 to 40 per cent. For stationary engines, and where water is abundant, a condenser is added, attached to an elongation of the bed-plate, and worked from the piston rod of the low-pressure cylinder. The general arrangement in a semi-portable form is very simple. The cast-iron bed-plate forms the ashpan and carries the boiler, which at its smoke-box end is supported on the top of the two cylinders. The steam is admitted by slide valves, worked by the ordinary link motion. The steam, after expanding about twice in the high-pressure cylinder, enters the steam chest of the low-pressure one, and expands in the latter to about six times its original volume.

To the mining engineer and to the director of mining companies probably no portion of Messrs. Fowler and Co.'s exhibit will be more interesting than the collection of models of crossings, curves, switches, turn-tables, inclined planes for shunting wagons off the line, &c.—in fact, of every contrivance required for the varying circumstances in which portable and semi-portable railways can be used. In connection with mines in new countries or undeveloped districts such railways would prove invaluable. The principle on which this system of portable railway is based is the distribution of the load on a great number of small light wagons, carrying loads up to 1 ton each. This permits the employment of a very light rail, so that two rails, firmly fixed to steel sleepers, are portable for one or two men, and being firmly connected require no further adjustment when thrown on the ground for immediate use. The sleepers are of steel, with a longitudinal corrugation in the middle, which much increases their strength. steel chairs are rivetted to these sleepers, against which the rails are pressed by a bolt, which by a hook grasps its lower flange. By these means the two rails form a perfectly rigid whole, whilst they can be dismounted readily, without the possibility of a mistake in refixing them. A double sleeper at one end forms the connection with the next rail length. The gauges are from 16 in. up to 30 in., but it would probably be preferable in every case where such a line is put down by a mining company to adopt the 30-in. gauge, in which case the line could frequently be made to repay its cost by outside traffic, giving the mining company almost free transit for its mineral and materials. The weight of the rail is 10 lbs. to 18 lbs. per yard, a complete length varying from 130 lbs. to 240 lbs. The wagons supplied for this railway all run on cast-iron chilled wheels, with steel axles. The axle-boxes have a self-greasing apparatus, and are provided with brass bearings. All wagons are mounted on springs, which is a very important feature, as it avoids the chance of their being thrown off the roughly laid tracks over which they often travel. In connection with this railway Messrs. Fowler and Co. manufacture three different sizes of locomotives. They are all tank engines, with outside cylinders, four coupled driving-wheels, and a two-wheeled bogie. The boiler has a fire-box of copper. The diameter of cylinder varies in the different engines from 5 in. to 7 in., and the stroke from 8 in. to 12 in., the diameter of the driving-wheels varying from 18 in. to 27 in., and the total weight in working order from 4¾ tons to 9½ tons. To many mining companies the possession of a light railway would be the means of changing the balance from the loss to the profit side of the account, whilst its construction would not certainly involve a large outlay.

BEUNO CONSOLS COMPANY, HOLYWELL.

It is always a source of pleasure to us to be in the position of reviewing favourably the progress displayed in the development of a new undertaking; but in the case of the Beuno Consols Company (Limited) we experience a very high degree of satisfaction in recording the extraordinary progress of the works now going on at that company's mines at Pen-y-Byrn, close to the ancient town of Holywell. Any observer passing along the high road from Holywell to Brynford, cannot fail to notice the energy displayed by the management of these mines. The erection of a really splendid engine-house and stores, the making of a tramway some 500 yards in extent along the mountain side from the washing-floors to one of the mine shafts situated in the wood crowning the mountain top; the laying of a tramway some three-quarters of a mile long in the adit level entering the mountain near the engine-house; the opening out of newly-discovered lodes in the Wood shaft, the timber shaft, and the adit level; the erection of a splendid engine with winding drum and pit-head gear, all really substantial, both in material and workmanship; the bringing to surface of the very large quantity of ore-stuff for the dressing-floors (some 40 or 50 tons); the extraordinary size of the blocks of pure galena, from 3 to 4 cwts. each, won from the various lodes; but, above all, the almost instantaneous manner in which the whole has been carried out during the last six months is certainly deserving of the highest praise, and must be a source of extreme gratification to the shareholders. On asking permission to view the mines we were informed by the manager (Capt. John Woolcock) that he should have great pleasure in showing us over and also under the ground. After viewing the surface, some 100 acres in extent, we were taken underground. Firstly, into an adit level entering the side of the mountain, close to the engine-house shaft; this level has been driven some considerable extent, but we were perfectly satisfied on reaching a third of the distance where the workmen had made a really splendid discovery; the brilliancy of the silver-lead ore in the sides, in the roof, and also in what the men called the sole was reflected in remarkable splendour by the lights we carried; it reminded us of the wonderful grottoes shown to Aladdin by the aid of his wonderful lamp. On emerging into the open air the sun was shining in a most resplendent manner, and the scenic view before us was really charming. We could easily see across the estuary of the River Dee to Crosby, near Liverpool, but our conductor had no time for scenic observations, so asked us to follow him to the engine-shaft.

Here we descended some 40 yards on an excellent ladder-way, having three stages or resting places. This shaft is sunk in the limestone, and is of good size, plenty of room for pumping, winding, and for ladder-way. On reaching the last stage we observed water below us, so declined to go further. It appears that preparations are going briskly forward to put down the large pumps we saw on the surface, which, when complete, will entirely clear these workings of water, which comes in pretty freely in the winter season. We were informed that it is intended to drive another level from the bottom of this shaft, which will go under the adit level some 30 yards deeper, and thus win the enormous deposits of ore said to be there, and which we do not in the slightest degree doubt, as all the indications in the shaft as we ascended proved where the former workers had been successful until stopped by water. We were next invited to follow our conductor up the tramway leading to the Wood shaft, and on ascending about 150 yards Capt. Woolcock pointed out to us at a short distance on our left a shaft that had been closed for 40 years until a week or two ago, when he caused a winze to be placed over it, and descended by a rope; he found it to be about 50 yards deep, and in very good order, and was about to explore its recesses. As there was no ladder-way we did not venture to descend, so we continued our walk, and a few yards further were shown a newly discovered lead lode cropping out on the surface, and a nice pile of lead obtained from it; it is intended to sink a sump, and then drive on the course of this new lode.

We then continued our course through the Wood to the timber shaft, where we found quite a line of workmen making the new road, and a horse winding up orestuff for the washing-floors. There is a large quantity of stuff here waiting for the tramway to be completed, so that it can be sent down the washing-floors. On descending the ladder-way in this shaft, one of our party being rather stout, he at some 30 yards deep got stuck fast, and it was only by a great effort that he could proceed; the shaft is small, consequently the ladder-way (which is boarded) is rather small. After we had descended five ladders we arrived at the bottom, where we were quickly repaid our toil in descending by the sight of the ore nearly all round us. Levels are being driven in all directions, and the yield of ore is something to be proud of; large blocks of solid ore, that we could not lift singly, are to be here seen. No wonder the manager felt proud of his work; it is simply splendid. We stayed down here a good half-hour, but ascending was really hard work; however, we at last got to the top much exhausted, and certainly did not feel inclined to proceed further. However, on being told that the next shaft was comparatively easy, we followed our conductor across the mountain top to the timber shaft. There is a washing-floor and a store-house here which we first inspected, and saw a quantity of ore ready for the market, and also some heavy blocks of galena that had been sent to the surface. On descending the ladder-way at this shaft, which we certainly found easy in comparison to the Wood shaft, we observed the same busy work going on. Silver-lead ore all round us, and the men working cheerily in the (to us) hot atmosphere. We thought the ventilation was defective, but the manager said not; but after examining the various levels and drivings and ascending to the surface we were far from being cool; we, however, quietly walked down the high road to the offices, close to the engine-house, where we had a good wash, much to the satisfaction of all. We cannot but express our views, which are also the views of all whom we have come in contact, that these mines are even now self-supporting, and we believe fully in a rich future for the Beuno Consols.

PRESERVATION OF LIFE IN MINES, &C. — At the International Exhibition of Means and Appliances for the Protection and Preservation of Human Life, open at the Alexandra Palace during the present month, there are many exhibits of considerable interest to miners, the six classes or sections being—Railway Safety Appliances. Means for Extinguishing Fires and the Rescue of Human Lives therefrom. Mining Safety Appliances. Apparatus for all Marine and Inland Water Emergencies. Surgical and Sanitary, and Engineering and Miscellaneous safety Appliances. In the first section, valuable exhibits are contributed by the Metropolitan Fire Brigade, Messrs. Merryweather and Sons, Wilkins, firemaster of the Edinburgh Brigade; E. H. Bayley, fire escape maker to M.F.B.; Sinclair, Spong, and the Chemical Fire-Engine Company of Bolton, &c. The United Asbestos Company extensively demonstrate the extraordinary properties of their paints and goods, whereby almost any substances are rendered incombustible. Dr. Tyndall, F.R.S., Messrs. Sinclair, Fleuss, &c., show their respirators, for enabling persons to enter smoky and noxious atmospheres without danger or inconvenience; while Capt. Wraa, at certain intervals during the day, practically illustrates the efficiency of his fireproof dresses, by comfortably performing evolutions in a large bonfire of no mean prevensions. In the Mining Section, numerous ingenious devices and apparatus are exhibited for reducing catastrophes in mines—Appliances for Preventing Overwinding Cages in Mines, Instruments for Detecting the Presence of Fire and Choke Damp, and every conceivable type of Safety Lamp, from the Davy to the most recent improved forms. The exhibition is altogether well worth a visit.

REPORT FROM CORNWALL.

July 6.—No news may or may not be good news, as the proverb has it, but the very little news in mining matters that we have this week certainly is so. While we were writing our report last week the smelters were putting up the standards a couple of shillings, but this of itself really left matters just where they were without their action, and was of little importance beyond helping to justify the impression to which we alluded, that decided and substantial improvements might be looked for in the first half of July rather than be postponed until after harvest. This forecast now seems to be further confirmed by the tone of the markets since, though still there is not sufficient stability to make it wise to speak with any degree of confidence. However that the state of the tin trade is healthier, and that the prospects are considerably bettered there can be no doubt, and activity under such conditions must speedily follow.

The two chief points to note in reference to Wheal Agar account are that this really good mine, which seems to be so very long in turning the corner, once again promises speedy success, and that it has served to display the liberality of the present Lord Robartes, and to prove that he is a worthy successor of his father. There never was a better mineral lord than the late Lord Robartes, and this grant of 500*l.* towards the boring machinery at Wheal Agar, which the present lord has made, is only one proof of several that have already been given that he is determined to follow in his father's footsteps. For the rest it would have been very much wiser to have made the 15s. call proposed by Mr. Bramwell than the 10s. call actually carried. The latter course was directly contrary both to the spirit and the letter of the Cost-Book System. Half of the difficulties which Cornish mining have got into from time to time have arisen from such unwise departure from the business lines laid down by our shrewd forefathers, that at every account one way or the other the ditch should make the hedge, and a fresh start be made again with a clean balance-sheet. It is very unwise and often very unsafe in mining to allow much to depend upon unforeseen contingencies. Some contingencies there must be, but so far as human foresight can provide for they should be discounted beforehand. Of contingencies Wheal Agar has certainly had its share, and we hope the turn has nearly come.

West Cornwall is more fortunate than other parts of the Great Western Railway system, and has had a reduction made in the recently advanced third-class railway fares. It is hoped that this may be but the beginning of better things.

The inquest on the men killed by the explosion of dynamite at Carn Brea—now three by a later death—has been adjourned for the attendance of Mr. Frecheville.

It is understood that Mr. W. Polkinghorne, now of Liskeard, has acquired the lead-smelting works and adjacent properties at Par, which were originally part of the great schemes of Mr. Austin Treffry, but which were brought into their present condition since his time, while the estates were in the hands of the late Rev. Dr. Treffry. Their development and reconstruction were in fact carried out under the direction of Mr. Polkinghorne himself, then resident at Tywardreath, and no man living better knows the value and capabilities of the property, or is better qualified to turn it to the best account. The Par Smelting Works are by far the largest and most important of their kind in the West of England, and the capacities of the harbour are too well known to need comment. Sooner or later, indeed, Par must have a big future.

TRADE OF THE TYNE AND WEAR.

July 5.—The past week has been lost to a considerable extent owing to the holidays connected with the race week in Newcastle-on-Tyne, but work has now recommenced in earnest. Baltic orders are pretty abundant, and the prospect of the steam coal trade is good for the present month; the demand causes prices to be very firm. The home demand for small and manufacturing coal continues good, and there are also numerous orders for exportation; on the whole, the prospect certainly favours the idea that steam coal must increase in value. The demand for Wallsend house coal continues quiet, and the price is certainly not very firm at present. At the Blyth and Amble ports in North Northumberland there has been much activity of late. At Amble the New Radcliffe Coal Company (Limited) are busily engaged in blasting operations, and in dredging for the purpose of improving their shipping berths, and the output of coal by this company is likely to be largely increased. There is also much activity at the Broomhill Colliery; a large quantity of steam and very good bunker coals are raised, and the new seam of house coal lately discovered there is being rapidly developed. At Blyth the commissioners are pushing the harbour works forward rapidly, and when these works are completed the shipment of coal will be largely increased.

The Durham miners' annual gala was held near that city on Saturday, when a large number of persons attended. About 45,000 were present, and the meeting was addressed by several able and popular men, including Mr. Burt, M.P., Mr. Crawford, Mr. Patterson, and others. The speakers generally addressed themselves to the condition of the coal trade in Durham and the present position of the miners, &c. All of them held that the trade is not in a satisfactory position, and that the miners are only in receipt of small wages. These views, however, are scarcely borne out by the facts. There is a large volume of trade, and no doubt the masters are not, as a rule, earning large profits, and the men are getting quite as high wages as the trade will afford. The occurrence of the late dreadful explosions at collieries in the county were, of course, alluded to, and Mr. Crawford expressed the opinion that all of them occurred through the use of powder for blasting. It is quite possible that firing shots may have been the means of exploding the gas in some of these cases; but the primary cause of the dire disasters, it is evident, is the accumulation of gas in goaves or branch workings, or the fouling of the air currents; and so long as this occurs there is a danger of such occurrences from a defective or imperfect lamp, such as the passage of the flame through the gauze of the Davy lamp, &c. So long as those materials for an explosion are found to be present, it is scarcely possible that the strictest discipline or care will prevent explosions. No doubt shot-firing ought to be entirely prohibited in fiery mines, or only carried on within the strictest limits, and the Davy and Clanney lamps ought also to be discarded in the same mines, and a safer and more perfect lamp substituted for these lamps, which have been found unsafe. But, after all, these measures can only be considered as palliatives; they do not strike at the root of the matter, and, therefore, cannot possibly effect a radical cure. If those disasters are ever entirely prevented, more comprehensive measures must be introduced. The accumulation of gas must, if possible, be prevented. This is, perhaps, a very difficult task to accomplish in many cases, but it is clear that, if the property of the mineowners is to be preserved and the loss of life prevented, this must be accomplished. Mr. Burt and other speakers stated the fact that at present there is sufficient work for all the miners in the Tyne and Wear—full and constant work; so that, looking at this fact, trade cannot be considered bad on the whole. Mr. Burt also stated that in 1870 the coal miners in the United Kingdom numbered 350,000, and in 1874 the number had increased to 548,000. In 1878, 63,000 had left the mines, and in 1880 the number of miners were more than 50,000 below what they were in 1874. He congratulated the miners on the recent adjustment of the sliding scale, and advised them to support it by every means in their power.

The iron market at Middlesborough, on Tuesday, was well attended. The price of No. 3 pig-iron is firm at 43s. 6d., prompt delivery. Heavy sales have been made by makers lately at those rates. The trade looked anxiously for the returns of stocks, which were given in the afternoon, showing a reduction of 8376 tons. Messrs. Connal's stocks of warrants have declined 2235 tons on the week. The shipments of pig-iron were increased last week by close upon 21,000 tons. An increased demand is expected, especially from Russia, as iron is being pushed forward on Russian account, on account of extra duties

soon coming into force. The deliveries of pig metal last month were 68,373 tons. The shipments in May were, however, larger, as they amounted to 71,505 tons foreign and coastwise. In June, 1881, the deliveries of pig-iron were 91,000 tons. Good shipments of steel rails are being made to Italy and other quarters. Generally the steel trade is rather quiet, and prices have been declining until heavy sections can be bought for 5*l.* or less per ton. Manufactured iron shows very little change. There has been some improvement in demand. Common bars are 6*l.* 2s. 6d.; ship-plates, 6*l.* 15s. to 7*l.*; puddled bars, 4*l.* net.

The Weardale lead miners came out on strike on Monday; they have resolved to take no more bargains under the present agents and the new system. The Board of the Ecclesiastical Commissioners do not appear to have arrived at any settlement with respect to the future working of the mines. The Commissioners have submitted to Mr. Beaumont a scale of dues on which to base a new lease; failing the acceptance of this they offer to submit the whole matter to the arbitration of Mr. D. Dale or the surrender of the lease, taking at a valuation the machinery and plant. Mr. Beaumont wishes to retire from mining, and has offered to sell the leasehold to the board or transfer to a new company. The position of these mines at present are certainly critical, but it is hoped that some settlement will be arrived at. There is certainly, however, some danger of lead mining in this famous old district being entirely closed. The lead trade on the Tyne is firm; there is no hope at present of any change in Spanish duties, and the present scale bears hardly upon lead sent to this country. Spain seems to be entering upon a progressive policy, but England will not reap any benefit unless our import duties on Spanish wines are reduced.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

July 6.—Pig-iron this week again shows a firm front in cases were the descriptions required are made outside this district. Some native pig-makers, too, are asking slightly more money. Springdale pigs were this afternoon quoted—2*l.* 2s. 6d., 2*l.* 12s. 6d., and 3*l.* 2s. 6d. for their respective qualities. Common pigs were to be had at 37s. 6d. to 40s., and medium sorts at from 45s. to 47s. 6d. and 50s. The Thorncliffe (South Yorkshire) brand was quoted at 60s. strong, delivered. It is a satisfactory indication for the near future that several additional blast-furnaces are ready to be relighted after being nearly rebuilt. Platemakers complained this afternoon of the severe competition which they have to meet from North of England firms, amongst others. The Middlesborough houses are ready to deliver plates of large sections into this district at 7*l.* 10s. per ton, whereas native makers declare that at 8*l.* per ton, even for small sizes, they can make no profit. The thin sheet and tin-plate firms alike report a brisk demand, the sheet-mills being especially active. Price are firm, and for sheets fairly remunerative. Bars are 8*l.* 2s. 6d. to 7*l.* 10s. for marked sorts, and 6*l.* 10s. to 6*l.* 5s. for common. The coal trade is without noticeable change. Prices of forge sorts vary from 6s. to 7s., and furnace sorts from 7s. 6d. to 8s. 6d.

On Wednesday, in Wolverhampton, there was a monthly meeting of the South Staffordshire Mines Drainage Commissioners, when a resolution was passed requiring all occupiers of mines within the drainage area to make a return of the amount of mineral raised by them during the six months ending with June 30. A motion was made for rescinding a resolution passed on the proposition of Mr. Fisher-Smith, the Earl of Dudley's agent, at a meeting of the Commissioners in May, enacting, as a new standing order, that no two members of any one firm or company should act on the same district committee. A warm discussion ensued, but the motion was lost by eight votes to nine.

The arbitrators under the Mines' Drainage Acts have now made their final award for a mines rate in the Tipton district. By this document a number of mines receive graduation, varying in amount from one-half to one-sixth of the rate.

The decision of the Westminster Judges in the action under the Employers' Liability Act of Griffiths *v.* the Earl of Dudley will be contested if the colliers of Dudley can have their way. They have determined to start subscription lists in order to enable Mrs. Griffiths to take her case before the Court of Appeal.

The quarterly meeting of the North Staffordshire Iron and Coal Masters' Association was held on Thursday, at Hanley—Mr. Wragge in the chair. The trade was reported to be in a quiet condition, no marked improvement having been experienced since the last quarterly meeting. The coal trade continued especially depressed, and the members of the trade present again called the attention to the fact that no equivalent increase in prices had been realised to cover the advance in wages of 5 per cent. which was conceded in October last; and it was urged that a corresponding reduction in wages, which had been so long deferred, ought now to be made. After some discussion, it was determined to give 14 days' notice, from Saturday, July 15, of a reduction of 5 per cent. in the wages of miners.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

July 6.—There has not been much alteration in mining affairs of late so far as Derbyshire is concerned. In the lead districts business is of a somewhat routine character, work going along on the old grooves, as it has long done, so that the production of ore is kept up to something like an average. The determination come to by the Eyam Company to smelt their own ore is not looked upon with much favour by many practical miners, because the mine has not paid. At the coal mines work has been comparatively quiet, and many of the men have now to be satisfied with four days a-week, and with by no means high wages. On the other hand, the owners can scarcely be said to be making any profit whatever, at so low a rate has coal to be sold owing to the competition and the moderate demand for some descriptions of fuel. The London market is certainly of great advantage to the colliery owners of Derbyshire and Nottinghamshire, but they have to compete with the seaborne coal, which is taken at a much lower rate. The Wallsend coal, as it is termed—although very little of it is sent to market, for it is peculiar only to the Newcastle district, being the highest workable coal and nearly worked out—is a great favourite in London, owing to the long familiarity with the name, but there must be a vast quantity sold under the designation that has never been within 50 miles of the sea. To judges of coal for household purposes the Silkstones of good quality cannot be excelled, for it is bright, with no dirt, parting in long pieces, known as splint, and is of a highly gaseous character. Some of it sent from Derbyshire is now delivered to consumers as low as 19s. per ton, the railway carriage and carting of which, without terminal charges or merchants' profits, cost 11s. per ton. Steam coal has been going off tolerably well of late, but not to the extent that could be desired. A considerable quantity of what is raised is used at the works, for there are now a large number of blast furnaces in operation, and these require upwards of 600,000 tons of coal and coke annually. The Staveley Company is now turning out the largest quantity of iron in the county, and has just secured the lease of several thousand acres of coal. The Stanton Company makes nearly as much pig, however, but does not raise anything like the same quantity of coal as Staveley. Both establishments, however, are well known for their castings, the Staveley foundry being the largest by far of any in the county. In finished iron the business doing is rather better than what it was. The steel works are as busy as they have yet been, for rails are still in good request, if they are rather low in price.

In Sheffield trade continues good, and in scarcely any branch are there complaints of slackness. There are not so many furnaces going as might be expected in a town and district where such a vast quantity of iron is daily consumed. Parkgate, which is near to Rotherham, on the Midland line, now takes the lead, having six furnaces in blast, and the mills are busy on plates and other material. Sir J. Brown and Co. have two furnaces going; but the company imports a good deal of steel an l iron, seeing that they are requiring a very large quantity for their works. Just now they are busily engaged on armour-plates, to which a great deal of attention is being paid by both Browns and Cammell's, who have now the whole trade in their own hands, and have orders in hand from our own and several other Governments for them. The Bessemer converters are kept in full operation, for a large quantity of that description of steel is now being absorbed for several purposes besides steel rails, although the mills engaged on the latter are doing well. There is also an increased output of cast steel at the different works, a good deal being for wheels, axles, tyres, and similar material. Shipbuilders have been sending in fair orders for plates, and more is being required for steel ships. The cutlery houses are fairly employed all round, both on home and foreign orders, whilst makers of edge tools are also doing well. This is the busy season for sheep-shears, and manufacturers have as much as ever they can do; and the same may be said with respect to light agricultural implement makers.

The South Yorkshire coal trade is still in anything but a satisfactory state, and some of the pits are not doing more than three days a week, so that at some places where steam coal is not raised the summer promises to be a particularly bad one. Steam coal goes off well, a considerable tonnage being forwarded to Grimsby and Hull for shipment from the former place in particular to the Baltic. Coal for engine purposes has been more enquired for, especially on the part of the Lancashire manufacturers—a healthy sign as regards trade in that county.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

July 6.—We shall soon have no rocks left in Shropshire and the Midlands of younger age than Pre Cambrian. Every bit of quartzite that by any stretch of ardent imaginations eagerly in quest of these old rocks is transmitted into Pre-Cambrian. I have no doubt but that in places rocks of this age do protrude through the newer strata of this district, but it seems to me that a more extensive knowledge of the whole of the metamorphic rocks from the base of the Bala limestone to the summit of the Cambrian (Geological Survey) on the part of the explorers is necessary before they are justified in speaking as positively as they do about the age of similar rocks. Nor do I think that there is enough of actual levelling and surveying, or that there is sufficient definiteness or extent in the few sections given to justify any sound geologist in accepting without further enquiry the conclusions of modern explorers, especially as there is so much haze and uncertainty about the base line of the Cambrian rocks themselves.

Many of the employees of the London and North Western Railway Company's works at Crewe reside at Nantwich, where their wives and daughters find employment in connection with the shoemaking industry of that town, the men travelling night and morning, or less frequently, to and from their work. Hence considerable dissatisfaction has arisen in consequence of a resolution recently come to by the authorities, that none of the men are to reside more than four miles from the works. It is to be hoped that some modification of the order may be made, which may reconcile the interests of the company with those of the men.

Although outside of my district—as no other correspondent is likely to refer to it—I may notice the revival of the project of a ship-going canal from Liverpool to Manchester. At present Garstang and Runcorn are the most inland ports for ships of considerable size, and a large trade is done at these ports in phosphates, felspars, clays, salt, sand, pyrites, and the various minerals used in the chemical, glass, and other works that abound in the region between Runcorn, Widnes, and St. Helen's It is proposed to make the Rivers Mersey and Irwell navigable from this point for large sea-going ships, laden with cotton, wool, and textile materials generally, right up to Manchester. It is a grand scheme; feasible, and one that would be advantageous to the cotton and woolen trades of Lancashire and Yorkshire generally. At any rate, it would be one effectual means of reducing railway freights.

Talking of railway rates, the North Wales coalowners are taking vigorous action to obtain a reduction of the rates charged by the Great Western from the Wrexham and Ruabon district to Birkenhead. Their complaint is that for from 25 to 30 miles they are charged more than half the sum at which the railway company carries coal from South Wales, a distance of about 150 miles. The matter is to be heard again shortly, when I hope their efforts will be successful.

It is pleasant to hear such good reports of the West Lisburne and the Bwlch United Mines in Cardigan, and of the Mona and Parys in Anglesea. With an increase in the price of copper these last mines should have a good future. Last year I recorded in these columns the impression I received from a visit I paid them, and it may be interesting to those connected with them, and to mining readers genetally, if, with the Editor's permission, I give next week a short account of a visit made to them just 100 years ago.

The men of the Black Park Collery, Chirk, who subsequent to the late strike had a difference with their employers, have gone to work, so that all the colliers in North Wales have returned to work. The epidemic seems to have travelled northward into Lancashire, where the men employed at the Haydock Collieries have threatened to cease work. A fatal accident has occurred at the Ifton Colliery, St. Martin's, where a youth named Kynaston was killed last week by a fall of roof. Only the deceased and one man were at work in the colliery, no engineman or surfaceman being employed during the night; and it was a long time before the man by repeated calls could bring any help. The pit is not a deep one. The inquest is adjourned for the attendance of Mr. Wynne, the Government Inspector.

TRADE IN SOUTH WALES.

July 6.—The steam coal trade of the principal ports of South Wales exhibits continued activity, as the following shipments will show:—Cardiff, 124,863 tons foreign, and 10,052 tons coastwise; Newport, 23,958 tons foreign, and 15,504 tons coastwise; Swansea, 18,483 tons foreign, and 8916 tons coastwise. The strike of 800 men at Fernhill and Blaenrhondda continues. Good doubled-screwed may be now quoted at 11s. per ton,

The iron and steel trades are in a rather improved condition. It is expected that some portion of the 200,000 tons of steel rails about to be ordered by the Government of France for the State railways will be made here. It is also anticipated that 10,000 miles of rails will be laid this year in the United States, which will probably lead to improved prices here, as, although locomotives can be made on the spot, the works are not equal to the large demand for steel rails At the annual meeting of the Ebbw Vale Steel, Iron, and Coal Company last week the following report was submitted:—

The gross profits for the year amounted to 92,320*l.*, from which has to be deducted for expenses of head office and legal expenses 956*l.*, and for interest on debenture and fully paid up shares 33,312*l.*, leaving a net profit for the year of 49,446*l.*, which has been appropriated thus—(1) Written off for depreciation of property, 22,028*l.*; (2) balance carried to profit and loss account, 27,417*l.* The amount of the credit of profit and loss account is, by the above addition of 7,417*l.*, increased to 73,610*l.* The directors have anxiously considered the questions of how this sum should be disposed of, and whether it would be prudent to distribute any portion thereof in dividend. In the reports for the years 1880 and 1881 the directors expressed the opinion that the dividends should be deferred until the bank balances had been discharged, or placed on a more satisfactory footing. These balances have not been paid, but that they are in a more satisfactory position is evidenced by the fact of the amount of debenture bonds deposited as security have during the two years been reduced from 60,000*l.* to 30,000*l.* Under these circumstances the directors invite the shareholders to take up 30,000*l.* of 5 per cent. debenture bonds in redemption of those now deposited with the bankers, and recommend the shareholders to adopt the following resolutions:—(1.) That a dividend of 5s. per share be declared, which will absorb 18,618*l.*—(2). That the value of the property of the company, as stated in the balance-sheet, be reduced to 1,790,000*l.*, thus absorbing a further sum of 33,820*l.*; and (3.) That the balance be carried forward to next year's account, amounting to 21,171*l.* Two years ago a sum of 10,000*l.* was reserved in the year's accounts to meet a special loss which was expected to arise in connection with the Pontypool Branch, but as this has not been required the directors have thought it advisable to write the amount off the property account.

At Cardiff 5609 tons of iron and steel have been sent away, and 1940 tons at Newport. Iron ore has been received to the extent of 4688 tons at Cardiff, and 9798 tons from other sources, and 6180 tons at Newport. The price may be quoted at 15s. 3d. per ton.

The tin-plate trade is again kept back from attaining a healthy state by the small masters flooding the market. Good coke-mades are only 16s. per box at Liverpool, whereas 17s. is a paying price, and 21s. would only be a fair return for manufacturers. Charcoal-mades are from 20s. to 21s.

The freighters have now 750,000*l.* promised towards a new dock at Barry, the West Mud, or the mouth of the Rumney river. This includes 150,000*l.* from Lord Windsor, contingent upon a site being chosen upon his land, and 100,000*l.* from the Great Western Railway Company. Mr. Abernethy, C.E., will be the engineer.

SCIENCE LECTURES.—No. I.

DELIVERED BY STUDENTS OF THE COLLEGE OF PRACTICAL ENGINEERING, MUSWELL HILL.

These lectures, treating of some of the most important topics in physical science have been inaugurated as a telling aid to the work of technical instruction. It has been found by experience that no more effectual means can be designed for fixing indelibly upon the minds of students the scientific instruction they receive than the task of having to impart this instruction to others under circumstances which will put each student on his mettle to produce a favourable impression on his audience. In this way, too, holes in his information which might otherwise escape notice will be discovered, and may thus be made good. To develope this idea in connection with engineering science is the main purpose for which these lectures were projected, though they will also otherwise aid in advancing the great work of technical instruction. The first lecture of the course was delivered on the 4th inst. by Mr. Hanks, one of the College students, with great clearness and self-possession, and if the other students acquit themselves equally well when their turn comes they will be taking the first step towards building up a high reputation. Of course it is only with topics of engineering science that the lectures can deal, and they afford no test of the proficiency reached in engineering workmanship. But we learned that this important part of engineering art is not neglected—one evidence of which is that arrangements are on foot in connection with Sir Joseph Whitworth's firm for enabling the pupils to produce face-plates and gauges of that refined and accurate character for which Sir Joseph Whitworth has long been famous. Workmen who can execute work distinguished by such accuracy will be equal to the performance of any task in workmanship occurring in the whole range of engineering, and such a credential cannot fail to be much future value to those who possess it. After a description of the different kinds of magnitude with which science deals, and a reference to geometrical forms, among which those known as the conic sections were mentioned as specially interesting, Mr. Hanks proceeded to consider the important question of the constitution of matter, a subject upon which very loose and crude notions are popularly entertained. The visible universe is built up of matter which may be in one of three states—the solid, the liquid, or the vaporous; and all of this matter, so far as we know, has weight. But it is conceivable that there may be a species of matter which is without weight, and it is at least certain that there is a fluid or fluids filling the interstellar spaces of less weight than the most delicate instruments are able to detect. Gravity itself may be a vibration propagated in such a fluid. We know that quantity is a force which extends to the whole sidereal system, and returns the planets in their orbits. The attraction of the sun and moon acting on the earth produces the tides; and as the action exists there must be some intermediate medium through which the force is propagated. The light of the sun is eight minutes in reaching the earth, which seems to show that the medium or ether in which it is propagated has some weight. But the force of gravity is propagated instantaneously, which seems to show that the medium or ether in which it is propagated is without weight. An apparatus was shown in which the attraction of gravity was imitated by producing rapid reciprocations, which caused a weight to traverse a horizontal wooden rod. Another apparatus was also shown, in which waves like those of water in which the particles rise or fall vertically without any onward motion were made to propel a glass ball in either direction, producing all the phenomena of electrical attraction and repulsion.

The composition and physical condition of the atmosphere was next touched upon, and it was stated that at a height of about 45 miles the weight of the gaseous particles will balance their repulsive force, so that the surface of the atmosphere will not extend beyond that height. As, however, the specific quantity of the oxygen and of the nitrogen, of which the atmosphere is composed, is not exactly the same, and as when two gases mix without combining each comports itself in the same way as if the other was not present, the oxygen atmosphere and the nitrogen atmosphere will not be of exactly the same height. The atomic composition of bodies was next touched upon, and the hypothesis of molecular vortices propounded by the late Professor Rankin, and which explains all the phenomena of matter, of heat, of light, and of electricity was described. The different specific gravities of bodies were next illustrated with the aid of appropriate apparatus, and the lecture ended with the ascent of a small balloon. The lecture was throughout distinguished for this valuable quality, that while so simple and elementary as to be intelligible to the least instructed auditor, it yet opened up vistas of information sufficiently recondite to enlist the attention of educated persons, and probably to add to their knowledge upon many points. Lectures by practical engineers of eminence will shortly follow, illustrating practical questions of engineering importance.

GEOLOGY OF THE WEST RIDING OF YORKSHIRE.—The Geological Association have arranged that this year's Midsummer Excursion shall embrace Harrogate and its neighbourhood, and shall be made on Monday, July 17, and five following days. As the direction of the party has been undertaken by Messrs. W. H. Hudleston, M.A. (the President), J. W. Davis, and Prof. John Morris, M.A., an enjoyable week is anticipated. Reaching Harrogate on Monday afternoon the Old Sulphur Well and the Bog Springs on the anticlinal which brings up the Yoredale rocks will be first visited, and those who have sufficient credulity to suppose that the water as dispensed to visitors is genuine, or that the various wells—magnesian, sulphur, chalybeate, and other—in the field near the drinking saloon, were ever genuine springs, placed by Nature in the impossible positions in which they are shown, will be permitted to drink nothing but the strong sulphur water during the remainder of the excursion. Birk Crag, Harlow Carr, and Harlow Hill will be visited the same afternoon, that the highly tilted Yoredale rocks may be noted. On Tuesday the party will go to Knaresborough to examine the unconformable junction between Millstone Grit and Magnesian Limestone, the dropping well, St. Robert's Cave, to note junction of Permians on the uneven surface of Millstone Grit, and the Plompton rocks. On Wednesday a move will be made to Skipton. The drive from Bolton Bridge to Skipton is extremely interesting. The Skipton and Bolton anticlinal extends along the centre of the valley. Mountain limestone is forced to the surface and quarried in several places; on each side the valley are the Yoredale limestones, shales, and sandstones, above which, on the north, are the gritstone escarpments of Halton and Embsay Moors, and on the south those of Draughton and Skipton Moors. Within easy distance of the road may be visited the Hambleton Rock Quarries, with limestone perpendicular, the Draughton Quarry, beautifully contorted, and the anticlinal at Skiptan Rock Quarries. On Thursday the party will proceed to Malham and note the hillocky character of the ground due to glacial deposits; the railway line pierces some of the mounds on the way from Skipton, Malham Cove marks the line of the south branch of the Craven Fault. Gordale Scars, 300 feet high, at base is Silurian grit. From Janet's Cave they ascend Gordale to the limestone pavement of moors above. Walk to Malham Tarn (1½ mile), half-a-mile from the tarn the water sinks, and after pursuing an underground channel for a mile and a quarter, re-appears in the village of Malham. They will descend to Malham by the cove. The path westward to Settle between Ryeloaf Hill (Millstone Grit) and the Limestone Scars to the northwards is in some parts on the line of the Fault. Trilobites have been found in abundance. On Friday the party will leave Skipton for Clapham Junction and Clapham, walking up the valley to Clapham Caves (half-a-mile in length), note outcrop of Silurian rocks in stream above the tarn. Ascend Ingleborough by Trout Gill to Gaping Ghyll Hole (?). Lunch at New Inn, Clapham; afterwards leave for Norber (1¾ mile); magnificent display of ice-borne boulders of Silurian rocks, resting on Mountain Limestone. By Wharfe walk round Moughton Fells to Foredale. At Combe Quarries there is a fine section, showing the Mountain Limestone lying unconform-

ably on the upturned and folded edges of the Silurian slates and grits. Thence to Horton-in-Ribblesdale and return to Skipton. The excursion will conclude with a visit to Raygill Quarries, in which is a fissure recently excavated by the Yorkshire Geological and Polytechnic Society. The bones of elephants, hippopotamus, rhinoceros, bear, hyæna, lion, bison, and some others have been found, and are at present in the Museum at Leeds. Veins of barytes cross the quarry, limestone highly inclined. London can be reached the same evening.

THE COAL TRADE.

Mr. J. R. Scott, the Registrar of the London Coal Market, has published the following statistics of imports and exports of coals into and from the port and district of London, by sea, railway, and canal, during June, 1882 :—

IMPORTS.

By Sea.	Ships.	Tons.
Newcastle	99	95,672
Sunderland	83	59,358
Seaham	26	15,284
Hartlepool	47	17,685
Middlesborough	—	564
Blyth	—	—
Scotch	8	1,580
Welsh	27	18,996
Yorkshire	19	2,384
Duff	1	852
Small coal	4	2,801
Cinders	3	700
Colonial	14	824
Total	331	216,700
Imports—June, 1881	367	246,132

By Railway and Canal.	Tons	cwt.
Lond. & North-Western	110,105	5
Great Northern	56,994	0
Great Western	66,410	0
Midland	144,409	0
Great Eastern	56,327	18
South-Western	5,432	4
London, Chat., & Dover	—	—
London, Til., & South.	—	—
South-Eastern	1,345	7
London, Brighton, &c.	—	—
Grand Junction Canal	926	0
Total	442,449	14
Imports—June, 1881	449,356	4

Comparative Statement, 1881 *and* 1882.

By Sea.	Ships.	Tons.
Jan. 1 to June 30, 1882	2533	1,345,483
Jan. 1 to June 30, 1881	2505	1,339,723
Increase—1882	28	5,740

By Railway and Canal.	Tons	cwt.
Jan. 1 to June 30, 1881	3,204,378	19
Jan. 1 to June 30, 1882	3,027,923	19
Decrease—1882	176,955	1

EXPORTS.

Railway-borne coal passing "in transitu" through district	Tons	78,468
Sea-borne coal exported to British Possessions, or to foreign parts, or to the coast	68,333	
Ditto sent beyond limits by railway	19,618	
Ditto by canal and inland navigation	1,543 =	39,999
Railway-borne coal exported to British Possessions, or to foreign parts, or the coast	39,258	
Ditto by rail beyond district	—	
Ditto, by canal and inland navigation	196 =	39,454
Sea-borne coal brought into port, & exported in same ships		1,304
Total quantity of coal conveyed beyond limits of coal duty district during June, 1882		209,225
Ditto, during June, 1881		201,510

Comparative Statement, 1881 *and* 1882.

Total distribution of coal from Jan. 1 to June 30, 1882		1,350,382
Total distribution of coal from Jan. 1 to June 30, 1881		1,321,564
Increase in the present year		28,818

General Statement, 1881 *and* 1882.

Decrease in coals imported by railway	176,955	
Less increase in coals imported by sea	5,740 =	171,215
Add increase in coals exported		28,818
Total decrease in trade within the London district		200,033

THE COPPER TRADE.

Messrs. HENRY R. MERTON and Co. (Leadenhall-street, June 30, issue the following Statistics of Copper :—

Stocks in Europe :—		
Chili bars, Liverpool and Swansea	Tons	20,689
Chili ingots, Liverpool and Swansea		945
Chili ores and regulus, Liverpool and Swansea (fine)		2,085
Other furnace stuff, Liverpool and Swansea (fine)		1,399
London, Foreign copper (chiefly Australian) and Landing		8,142
Chili bars, ingots and barilla in Havre		3,939
Other copper in Havre		365
Afloat, and chartered from Chili to Europe (advised by mail):		
Ores and regulus (fine)		2,444
Bars and ingots		1,874
By cable, ores and regulus (fine)		700
Bars and ingots		3,500
Afloat from Australia to Europe (advised by mail):		
Fine copper		508
By cable: Fine copper		1,150
Total		47,620

Price of Chili bars, 67*l.* per ton.

Messrs. HARRINGTON, HORAN, and Co. (Liverpool, June 30) write :—Chili copper charters for second part of this month have not yet come to hand. During the past fortnight Chili bar market has been very steady, but free from any animation, and transactions have taken place from 68*l.* 15s. to 67s. 7s. 6d. spot, and 67*l.* 15s. to 63*l.* 7s. 6d. forward. We close steady at 67*l.* 5s. for good ordinary brands on the spot. The sales of furnace material comprise, at Liverpool, 30 tons Mexican ore to arrive, at 13s. 7½d., 95 tons Canadian regulus at 13s. 6d., and 384 tons Italian ore (low produce) to arrive, 13s. 3d. per unit. Precipitate, 65 tons English (buyers works), at 13s. 10½d., 50 tons Rio Tinto (shipment to London), and 260 tons spot Liverpool at 14s. per unit. There has been no Swansea sale during the past fortnight. Import of Chili copper during the past fortnight, 928 tons fine, against 415 tons fine same time last year; delivery of Chili copper during the past fortnight, 1117 tons fine, against 823 tons fine same time last year; import of other copper during the past fortnight, 343 tons fine, against 718 tons fine same time last year; delivery of other copper during the past fortnight, 783 tons fine, against 918 tons fine same time last year. Arrivals here during the fortnight of West Coast, South America, produce :—Arica, from Valparaiso, 207 tons bars; Britannia, Valparaiso, 315 tons bars, 202 tons ingots; Caldbeck, 454 tons regulus. At Swansea, *nil*.

Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at—

	Ores.	Regulus.	Bars.	Ingots.	Barilla.
Liverpool	—	744	13,059	742	—
Swansea	305	3,753	7,530	183	—
Total	305	4,497	20,589	925	—

Representing about 23,599 tons fine copper, against 23,786 tons 15th inst.; 30,475 tons June 30, 1881; 33,500 tons June 30, 1880; 29,778 tons June 30, 1879. Stock of copper contained in other foreign ore and Spanish precipitate, 1399 tons fine, against 2121 tons June 30, 1881. Stock of Chili bars and ingots in Havre, 3142 tons fine, against 4272 tons June 30, 1881. Stock of Coro Coro barilla in Havre, 1063 tons fine, against 351 tons June 30, 1881. Stock of copper other than Chili in Havre, 365 tons fine, against 1140 tons June 30, 1881. Stock of Chili copper afloat and chartered for to date, 8536 tons fine, against 12,300 tons June 30, 1881. Stock of foreign copper in London, chiefly Australian, 8142 tons fine, against 9389 tons June 30, 1881.

Messrs. RICHARDSON and Co. (July 1) write :—The Swansea imports of foreign copper produce during the quarter ended June 30 (including trans-shipments—Australian ore, 748 tons, and Portuguese precipitate 48 tons) were: Ore, 13,477 tons; regulus, 1874 tons; copper, 1426 tons; precipitate, 1646 tons; and Barilla, 11 tons. The exports of bars, ingots, yellow metal, and nails during the same period were 272 tons 2 cwts. 3 qrs. 7 lbs. The stocks of foreign copper produce remaining unsold at Swansea on July 1 were—Chilian ore, 305 tons; regulus, 3743 tons; copper, 7713 tons; Cape ore, 220 tons: New Quebrada ore, 2382 tons; Cuban ore, 184 tons; Spanish regulus, 126 tons; precipitate, 589 tons; British precipitate, 16 tons; total ore, 3091 tons regulus, 3879 tons; copper, 7713 tons; precipitate, 605 tons. These totals represent about 10,270 tons fine copper. The private sales reported are: 43 tons Rio Tinto leaf precipitate at 14s. 3d.; 316 tons Rio Tinto precipitate at 14s. 147 tons of Carracedo ore was sold by private ore was sold by private ticket. The Chili advices give charters for the first fortnight of June as 1700 tons pure—850 tons being in bars and 800 tons pure in ores and regulus for England, and remainder 550 tons bars to order for here or France. The shipments from that quarter during the first five months of the past four years were 20,386 tons, 20,696 tons, 14,081 tons, and 16,964 tons respectively.

Messrs. JAMES LEWIS and SON (July 1) writes :—The statistics on the first of the month showing a considerable reduction in the visible supply of copper the market for Chili bars was very firm at 68*l.* 12s. 6d. to 68*l.* 15s. for cash G.O.B.'s, and 69*l.* 5s. to 69*l.* 10s. for three months prompt. These prices were maintained until the 7th, when in the absence of buyers they gave way, and gradually receded until the 12th, the charters being advised as 1700 tons fine, of which 550 tons in bars were for France; 66*l.* 12s. 6d. down to 66*l.* 7s. 6d. was accepted for sharp cash, and 67*l.* 10s. for three months. From this point there was a sharp reaction to 67*l.* 10s. for usual 14 days, and 68*l.* 5s. for three months prompt, but the unsatisfactory state of affairs in Egypt again led to a decline of 10s. to 15s. per ton on the 16th, which was recovered on the 19th. A limited business was done between this date and the 27th at 66*l.* 15s. to 67*l.* for sharp cash. Since the 28th the demand has somewhat increased and slightly higher prices have been paid, to-day's quotations being 67*l.* 5s. for spot G.O.B.'s, and 68*l.* with three months prompt. Ore is worth 13s. 7½d. to 13s. 9d. per unit and regulus 14s. The arrivals from Chili have been 1980 and the deliveries 2163 tons, and from other countries 1825 and 2652 tons fine respectively. The stocks of Chili produce are—Bars, Liverpool, 13,059; Swansea, 7530 = 20,589 tons; ingots, Liverpool, 742; Swansea, 183 = 925 tons; regulus, Liverpool, 744; Swansea, 3753 = 4497 tons; ore, Swansea, 305 tons. This is equal to 23,599 tons fine, against 23,782 tons on June 1, against 30,475 tons fine, July, 1881, when quotations were, bars 58*l.* 10s., ore 11s. 9d.; against 33,500 tons fine July, 1880, when quotations were bars, 59*l.* 15s., ore 12s.; against 29,776 tons fine, July, 1879, when quotations were bars 55*l.* 1's. 6d., ore 11s. 1½d.; against 19,675 tons fine, 1878, when quotations were bars 64*l.* 5s., ore 13s. 6d. The total visible supply is 47,967 tons fine, which does not include charters now due, against 49,019 tons on June 1, 51,358 tons, July, 1881, and 65,433 tons July, 1880.

THE TIN TRADE.

Messrs. STRAUSS and Co. (London, June 30) issue the following Statistics of Tin :—

	May 31, 1882.	June 30, 1882.	June 30, 1881.
Straits and Australian, spot.....Tons	7,894	7,866	8,051
,, ,, landing	484	176	331
Straits, afloat	125	100	857
Australian afloat	987	691	1,273
Banca, on warrants	1,426	846	867
Billiton, spot	1,100	1,368	1,737
,, afloat	854	993	800
Australian tin in Holland	79	56	—
Stocks in America, including quantity afloat	2,530	2,290	3,195
Total	15,479	14,383	16,841
Prices of Straits and Australian	£ 97 10	£98 5	£89 0
Deliveries during month in London	1,342	1,184	1,093
,, ,, ,, Holland	512	731	738
Total	1,854	1,915	1,831

Shipments during the month from Straits to London 100 tons, from Australia to London 350 tons, from Straits to America 150 tons, from Australia to America 150 tons. Banca in Trading Company's hands and afloat, 2338 tons.

Messrs. EBELING and HAVELAAR (Rotterdam, June 30), write :—We have had a very quiet market for tin during the greater part of this month, prices tending occasionally in favour of buyers. The concessions made by holders have, however, been trifling, the present range of prices being generally considered a safe one in the face of a satisfactory demand for consumption and moderate fresh supplies. Some speculative enquiry has sprung up during the last few days, and there is a firm feeling at the close.—BANCA: The trade have been buying largely, as is sufficiently shown by this month's deliveries. The price fell from 58½ frs. to 57½ frs., which decline has, however, been since recovered. We close with buyers at 59 frs.—BILLITON: The demand has been slow, the price at one time receding to 57¼ frs. A speedy recovery has taken place in the course of this week, and there are now buyers of spot parcels at 59 frs., forward deliveries being quoted ½ fr. higher: 11,000 peculs Billiton offered in public sale at Batavia on June 27, fetched the average price of 652½ frs., costing to sell here about 58¼ frs. by steamer. About the same quantity will be offered for sale on Aug. 29.

The position of Banca tin in Holland on June 30, according to the Official Returns of the Dutch Trading Company, was—

	1882.	1881.	1880.
Import in June.....Slabs	14,670	27,317	10,555
Total six months	73,740	81,537	44,041
Deliveries in June	18,546	13,529	11,792
Total six months	68,613	78,650	68,390
Stock second hand	27,084	27,749	35,459
Unsold Stock	64,208	70,167	31,158
Total stock	91,292	97,916	66,617
Afloat.....Peculs	13,300	6,300	5,150
Statement of Billiton :—			
Import in June.....Slabs	13,500	10,900	21,000
Total six months	66,301	58,750	55,233
Deliveries in June	4,758	10,502	14,935
Total six months	47,519	55,480	54,820
Stock	43,798	55,584	57,667
Afloat.....Peculs	18,000	20,000	15,000
Quotation, June 30—Banca	59 fl.	54 fl.	48½ fl.
Billiton	59 fl.	53¾ fl.	48 fl.

These combined returns of Banca and Billiton for 1882, compared with those for 1881, exhibit—A decrease of the import for June of 314 tons; a decrease of the import for the six months of 8 tons; a decrease of the deliveries for June of 23 tons; a decrease of the deliveries for the six months of 563 tons; a decrease of the stock second-hand of 339 tons; a decrease of the unsold stock of 186 tons; a decrease of the total stock of 575 tons; an advance of the quotation of Banca of 5*l.* 6s. per ton.

The Government Returns for the month of April are—

EXPORT OF TIN FROM HOLLAND.

	April.			Four Months.		
	1882.	1881.	1880.	1882.	1881.	1880.
To Germany.....Tons	430	290	331	1125	1116	1199
England	3	10	52	16	239	737
Belgium	104	165	173	331	751	1047
France	54	73	23	135	212	223
Hamburg	46	24	120	132	195	333
The United States	10	—	45	19	10	267
Other countries	31	53	43	59	126	107
Total	678	615	787	1817	2649	3913

COPPER AND TIN.—Messrs. HENRY ROGERS, SONS, and Co. (July 6) write :—After touching 68*l.* 12s. 6d., and then receding as low as 66*l.* 10s., copper at the time of writing is strong at 67*l.* Buying has been checked by the political outlook and by the rather heavy West Coast Charters lately cabled—5500 tons for five weeks. Though in excess of these advised to June 30, 1881, the West Coast charters to the same date, 1882, are a little less than half the total of last year. Deliveries during the month in England and France are 6160 tons, as against 6439 tons last year. The statistics published on June 30 show a marked diminution in stocks of tin, the total stocks, including American, being 14,383 tons, against 16,841 tons at the same date last year, and 20,291 tons on June 30, 1880. The English deliveries which have taken place during the month amounted to 1184 tons (as against 1093 tons twelve months ago), and as the shipments to both England and America only total 700 tons the decrease in stock during June is considerable—some 1100 tons. Considerable fluctuations have occurred in prices, chiefly due to financial difficulties amongst foreign operators. In view of the statistical position as shown above prices have again hardened considerably, and we quote to-day foreign tin 99*l.* 10s. There is as yet no appearance of any important falling off in the tin-plate trade, and the exports indicate a slight increase in consumption. The price in the Straits is equivalent to about 106*l.* London, with strong local demand.

Messrs. FRENCH and SMITH (July 16) write :—For copper values are fairly supported, but the demand is limited, and charters from the West Coast are on a larger scale than for some time past. The total stocks, Liverpool, Swansea, Havre, and London, including Australian and Chili produce, afloat and chartered, were 47,620 tons on July 1, against 59,936 tons at same date last year. The failure of two houses in Paris having large dealings in tin disturbed the market, and for a time prices were irregular, but as their actual holdings were insignificant, the disaster had no permanent effect on values. Throughout the past month there was a good demand for both foreign and English, and as shipments from Australia and the Straits were very small, statistics compare favourably. On the 27th ult., 11,000 picul's Billiton, offered at public sale in Batavia, realised average price of 65·20 fls., equal to about 58¼ fls. in Holland. Fine foreign in London fluctuated between 99*l.* 10s. and 100*l.*, closing at 99*l.* In Holland, Banca and Billiton, 57½ fls. and 61½ fls. English ingots, 100*l.* to 104*l.*

NATIONAL COLLEGE FOR MINERS.—A Tavistock correspondent largely interested in Green Hurth and Gunnislake (Clitters) writes that these mines should have a grand future, as both are full of ore; all that is required is economical, honest, and scientific management by educated mining engineers, for whom there should be a national college, degrees, &c. As it is, he continues, metalliferous mining is conducted by unqualified uneducated men, who grope in the dark, and only succeed by blundering accidents, not by deduction or intelligent rules; thus mining is less successful and certain than other pursuits, or than it should be in this advanced scientific age.

PROVINCIAL STOCK AND SHARE MARKETS.

CORNISH MINE SHARE MARKET.—Messrs. ABBOTT and WICKETT, stock and share brokers, Redruth (July 6), write :—We are unable to report any great improvement in prices notwithstanding the advance of 4*l.* in the tin standards. A fair enquiry for Wheal Agars and East Pools. Good business in Killifreths. Subjoined are the closing quotations :—Blue Hills, 1½ to 1¼; Camborne Vean, ¼ to ⅜; Carn Brea, 11 to 12; Cook's Kitchen, 38½ to 39; Dolcoath, 69¾ to 69⅝; East Pool, 54¾ to 55; Killifreth, 5⅞ to 6; New Cook's Kitchen, 6 to 6⅛; North Busy, 1 to 1⅛; Pednan-drea, 3⅛ to 3⅜; Santa Gertrude, 170 to 175; South Condurrow, 8 to 8⅛; South Crofty, 10½ to 11; South Frances, 11¾ to 12⅛; Tincroft, 12⅛ to 13; West Basset, 9¾ to 10⅛; West Kitty, 10 to 10⅛; West Peevor, 11¾ to 12⅛; West Frances, 9 to 10; West Seton, 17⅛ to 18⅛; Wheal Agar, 16¼ to 16⅝; Wheal Basset, 10 to 10⅛; Wheal Grenville, 10½ to 11; Wheal Peevor, 9 to 9⅛; Wheal Uny, 3 to 3¼.

— Mr. J. H. REYNOLDS, stock and share broker, Redruth (July 6), writes :—On Tuesday the smelters raised the standards 2s. per cwt; this with the improved price for tin caused an enquiry for all the leading shares, and prices improved, but do not close at their best to-day. Wheal Agars firm, also Wheal Bassets. Subjoined are the closing quotations :—Blue Hills, 1¼ to 1⅜; Carn Brea, 12⅜ to 12½; Camborne Vean, 5s. to 7s. 6d.; Cook's Kitchen, 38¾ to 39⅛; Dolcoath, 69¼ to 69⅜; East Pool, 54¾ to 55⅝; East Blue Hills, 10s. to 12s. 6d.; Killifreth, 5⅞ to 6; Marke Valley, ⅛ to ⅜; Mellanear, 4¾ to 5⅛; New Cook's Kitchen, 6 to 6⅛; New Kitty, 1¾ to 2; North Busy, 1 to 1⅛; North Herodsfoot, 7s. 6d. to 10s.; North Pensnruthal, ⅜ to ⅝; Pednan-drea, 3⅛ to 3⅝; Phœnix, 2⅜ to 2⅝; South Condurrow, 8 to 8⅛; South Crofty, 10⅛ to 11; South Frances, 11¾ to 12⅛; Tregembo, 3 to 3⅛; Tincroft, 12 to 13; West Basset, 10 to 10⅛; West Frances, 9 to 10; West Kitty, 9¾ to 10⅛; West Peevor, 12⅛ to 12⅜; West Polbreen, 1 to 1⅛; West Poldice, 5⅛ to 5⅛; West Seton, 18⅛ to 18⅜; West Tolgus, 14 to 15; Wheal Agar, 16⅛ to 17; Wheal Basset, 10 to 10⅛; Wheal Boys, 1½ to 2; Wheal Grenville, 10⅝ to 11; Wheal Hony and Trelawney, ⅛ to 2⅛; Wheal Kitty, 1 to 1¼; Wheal Peevor, 9⅛ to 9⅜; Wheal Prussia, ⅜ to ⅝; Wheal Uny, 3 to 3⅛; Wheal Jane, ⅝ to ¾.

— Mr. S. J. DAVEY, mine sharedealer, Redruth (July 6), writes :—Our market has been inactive throughout the week, and prices continue without much alteration. Wheal Agars have risen 20s., call of 10s. paid. At Carn Brea meeting to-day a loss of 3 96*l.* was shown on the sixteen weeks. Standards have twice been advanced 2s., and are now 95s. to 96s. There is but very little doing to-day. Subjoined are the closing quotations :—Blue Hills, 1¼ to 1⅛; Carn Brea, 11⅝ to 12; Cook's Kitchen, 39 to 40; Dolcoath, 69 to 70; East Blue Hills, 10s. to 15s.; East Lovell, 1¾ to 1⅞; East Pool, 54¾ to 55⅛; Killifreth, 5*l.* 17s. 6d. to 6*l.*; Mellanear, 4¾ to 4⅞; New Cook's Kitchen, 6 to 6⅛; New Kitty, 1⅝ to 1⅞; North Busy, ⅞ to 1⅛; Phœnix, 2¼ to 2⅛; Pedn-an-drea, 3⅛ to 3⅝; South Condurrow, 8¼ to 8⅝; South Crofty, 10¼ to 11¼; South Frances, 12 to 12⅜; Tincroft, 12½ to 13; West Basset, 10 to 10¼; West Frances, 9½ to 10; West Kitty, 10 to 10½; West Peevor, 12¼ to 13; West Poldice, 5 to 5½; West Tolgus, 13 to 15; West Seton, 18 to 19; Wheal Agar, 16¼ to 16½; Wheal Basset, 10 to 10¼; Wheal Comford, 1¾ to 1⅞; Wheal Grenville, 10½ to 11; Wheal Jane, ½ to ¾; Wheal Peevor, 9½ to 10; Wheal Kitty, 1 to 1¼; Wheal Uny, 3 to 3¼.

— Mr. M. W. BAWDEN, Liskeard (July 6), writes :—The mining market appears dull and devoid of animation. Although the price of tin has advanced to 100*l.*, and the stocks considerably reduced, there shows but little disposition to invest, and prices are much the same. Subjoined are the closing quotations :—Bedford United, 1⅝ to 1¾; Carn Brea, 12½ to 13; Cook's Kitchen, 38¼ to 39; Dolcoath, 69½ to 70; Devon Consols, 6 to 6¼; Devon Great United, ⅜ to ½; East Caradon, ⅛ to ¼; East Pool, 54 to 54½; Gawton United, ¼ to ⅜; Glasgow Caradon, ⅝ to ¾; Gunnislake (Clitters), 2½ to 2⅝; Herodsfoot, ⅛ to ¼; Hingston Down, ⅝ to ¾; Killifreth, 5¾ to 5⅞; Marke Valley, ⅛ to ¼; New West Caradon, ⅛ to ¼; North Herodsfoot, ⅛ to ¼; Old Gunnislake, ⅛ to ¼; Phœnix United, 2¼ to 3; Prince of Wales, ⅜ to ½; South Caradon, 10½ to 11; South Condurrow, 8 to 8¼; South Crebor, ¾ to ⅞; South Crofty, 11 to 11½; South Devon United, ½ to ⅝; South Frances, 12 to 12⅛; Tincroft, 13 to 13½; West Basset, 10 to 10⅛; West Caradon, ⅝ to ¾; West Frances, 9½ to 10; West Mary Ann, ½ to ¾; West Phœnix, ¾ to ⅞; West Seton, 18 to 18½; Wheal Agar, 15 to 15½; Wheal Basset, 10 to 10¼; Wheal Crebor, 2¼ to 2⅜; Wheal Grenville, 11 to 11¼; Wheal Hony and Trelawny, 1⅞ to 2; Wheal Kitty, 1 to 1⅛; Wheal Jane, ½ to ⅝; Wheal Peevor, 9 to 9½; Wheal Uny, 3⅛ to 4, c. p.; East Herodsfoot, ⅛ to 1.

— Mr. JOHN CARTER, mine sharedealer, Camborne (July 6), writes :—There is little change to notice in the share market this week. On the 4th inst. the tin standards were advanced to 95s. and 96s., a rise of 2s. Closing quotations are annexed :—Carn Brea, 12 to 12½; Cook's Kitchen, 38 to 39; Dolcoath, 69 to 70; East Pool, 55 to 55⅛; East Blue Hills, ⅜ to ⅝; Killifreth, 5⅞ to 6; Mellanear, 4¾ to 5⅛; New Cook's Kitchen, 6 to 6⅛; New Kitty, 1⅝ to 1⅞; Pedn-an-drea, 3⅛ to 3⅜; South Condurrow, 8 to 8⅛; South Crofty, 11 to 11⅛; South Frances, 12 to 12⅛; Tincroft, 12½ to 13; West Basset, 9¾ to 10⅛; West Frances, 9½ to 10; West Peevor, 12 to 12⅛; West Poldice, 4¾ to 5; West Seton, 18 to 19; West Tolgus, 12 to 14; Wheal Agar, 16¼ to 16½; Wheal Basset, 10 to 10⅛; Wheal Grenville, 10½ to 10⅝; Wheal Kitty, ⅞ to 1; Wheal Peevor, 9 to 10; Wheal Uny, 3 to 3¼; West Kitty, 10 to 10¼. At Carn Brea meeting a loss of 3097*l.* was shown.

MANCHESTER.—Messrs. JOSEPH R and W. P. BAINES, share brokers, Queen's Chambers, Market-street (July 6), write :—The situation in Egypt has been the chief factor in the movement in stocks, &c., during the past week, and as affairs there keep in a very strained condition, rumours have been more frequent and have had more or less distinct influence on prices, but throughout the fluctuation; the feeling has been very sensitive and drooping, what rallies have occurred being very fitful, and almost momentary having been caused mainly by reports taken to give hopes of pacific solution of the difficulties, but which have on enquiry not been confirmed. The weather, too, having been stormy during the greater part of the week has led to fears being entertained for the result of the harvest, and these having added another element of despondency have doubtless helped the downward movement. The changes, however, are not to be compared to those marked during last account, and evidences are not wanting to show that the markets would very quickly respond to any well-ascertained favourable influence. Much of the selling appears to be of a speculative nature, and as the public do not consider it wise in the present aspect of affairs to enter the market as buyers, operators for the fall are having much of their own way. In the several classes of shares other than rails only a retail business is passing, but values do not show distinct one-sided alterations.

BANKS are quieter than they have been, but figures on the whole are well maintained. The changes in quotations are unimportant. Higher: Lancashire and Yorkshire, ½; Lower: Union of Manchester, ½.

INSURANCE.—The tone in these shares is hardly so distinctly weak as we have had to report several times recently, although the change in quotations shows a small adverse majority. Lancashires have been done several times, and the later prices realised are the best. Manchester Fires, which have been going regularly lower for some time, have turned a little, for after recording a fall of ¼, are now

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about the same as last report. Higher: Lancashire, 1/16; Reliance Marine, 3/16. Lower: Maritime, 1/8; Thames and Mersey Marine, 1/4; Liverpool and London and Globe, 1/4; Manchester Underwriters, 1/8; Queen, 1/16.

COAL, IRON, &C., AND MINING, have produced very few transactions, and where other than solitary transactions are marked, the more recent are lower. Quotations are again decidedly weaker in the majority of cases where any change is to be noted. Bolckows of both issues have changed hands a few times, and figures are down. Ebbw Vales have not been dealt in, and after rallying 1/2 to-day, still show a small decline on the week. Cammells and Tredegar Coal, &c., both exhibit decided changes, the former for the better and the latter adverse. A. Knowles and Sons have been done a few times at full quotations, and buyers' figure is slightly better, sellers' quotation remaining unchanged. Higher: Cammells, 3/4; United States Rolling Stock, 1/4; John Browns, 1/4; and Tharsis Sulphur, &c., 1/8. Lower: Tredegar Coal, &c., A and B, 1/4 each; Bolckows (fully paid), 1/8; Palmer's Shipbuilding, B, 1/4; Rio Tinto, 1/4; Bolckows (12l. paid), 1/4; Ebbw Vale, 1/8; Indian Glenrock, 1/8; and Indian Trevelyan, 1/8.

COTTON SPINNING AND MANUFACTURING.—Though the results of last quarter's working made known up to the present are on the whole satisfactory, this market keeps very inanimate, with prices showing slight downward tendency.

TELEGRAPHS are, on the whole, rather stronger. In Anglos only the preferred exhibit any change in value, but they record a rise of 1 1/2. Direct United States Cable, Eastern, and Globe preferred are each also rather better. Western and Brazilian marked lower up to to-day, when they have rallied, and no change on the week is to be noticed.——TELEPHONES are quiet and easier, United being foremost, with a fall of 3/8.——CANALS are firm, and enhanced figures are to be found in Lancaster (1/4) and Macclesfield (1/2). On the other hand, Bridgewater pref. are 1/4 lower. Corporation stocks, &c., very firm, Manchester stock being up another 1.——MISCELLANEOUS generally quiet. Manchester Carriage and Trams "B" and "C" issues both better. Hudson's Bay have been heavily sold, and mark a severe decline. Bodegas fractionally better.

RAILWAYS.—Political news has exerted all powerful influence on the markets, and the general decline which is to be recorded is attributed to the unsettled state of Egyptian affairs, and it is not to be expected that improvement will take place till this question presents a more favourable aspect. The breakdown in the weather has assisted the adverse movement, threatening grievous trouble to agricultural prospects. In the face of these disturbing elements operators for the rise show no disposition to move, and values droop more or less day by day. Great Westerns are foremost amongst the declines. An exception is found in Sheffield stocks, traffic returns being very good. There is a distinct advance in Canadians, though best points are not quite maintained. Traffics come better, and with rates advanced from July 1 hopes of further improvement are encouraged. Americans are irregular, as while a rise is established in most securities New York, Pennsylvania, and Ohio First Mortgage and Readings each exhibit a decline.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, sharebroker and ironbroker (July 6), writes:—During the past week the markets have continued unsettled, owing to the unfavourable state of matters in Egypt; but should this become more settled there is every chance of a recovery in prices, owing to the favourable tendency of trade, prospects of good crops, and the easy money market. An upward movement of much importance is, however, hardly to be expected in view of the approaching holidays, and the recent heavy losses to operators.

In shares of coal, iron, and steel companies, Marbellas are 2s. 6d. higher at 6l. 3s. 9d. to 6l. 6s. 3d., but the others do not show much alteration. In the Scotch pig-iron market the price of warrants has advanced from 48s. 8d. to 49s. 7 1/4d., in sympathy with the advance by makers in their price, as well as the publication of the Middlesborough stock returns for June, showing a decrease of over 8000 tons. The present price of iron is not very remunerative to makers, so speculators begin to pay more attention to the article seeing it can be held for a year at a cost of only 3s. per ton. There is an improvement in trade reported from all quarters, so that the prospects for the autumn are very favourable, and it is expected a considerable reduction will be made on the stocks in the United Kingdom, which at present do not exceed 15 weeks' consumption. Alltamis are at 25s.; ditto (Bonds), 7; Cardiff and Swansea Coal, 30s. to 40s.; Chatterley Iron, 6 1/2 to 7; Lynvi and Tondu, 6 to 6 1/2; and ditto (Pref.), 61s. 3d.

In shares of foreign copper concerns there has not been much business doing. Tharsis have recovered from 39 1/4 to 40 1/2; Yorke Peninsula remains at 4s. to 6s.

In shares of home mines business has also been quiet, but the rise in the tin market may be expected to attract attention to shares of tin mines. Bedford United are at 32s. 6d. to 37s. 6d.; Bwlch Unit ed, 15s. to 25s.; Bell Vean, 10s.; Cambrian, 5s. to 7s. 6d.; Caron, 2s.; Carn Camborne, 12s. 6d.; Carn Brea, 13; Carpellas, 2s 6d.; Drakewalls, 7s. 6d. to 10s.; East Lovell, 25s. to 30s.; East Wheal Rose, 5s. to 7s. 6d.; East Roman Gravels, 7s. 6d. to 10s.; Flintshire Great Consols, 22s. 6d.; Great Holway, 60s. to 90s.; Gover Consols, 5s.; Indian Queens, 3s. 6d.; Mounts Bay, 5s. to to 7s. 6d.; New Penrose, 2s. 6d.; Old Gunnislake, 2s. to 4s.; Old Shepherds, 5s. to 7s. 6d.; Parkas, 3s. 6d.; Rhosesmor, 55s. to 65s.; St. Just United, 8 to 10; South Frances, 12 1/2; Silver Hill, 5s.; Tamar, 5s. to 10s.; Van United, 15s. to 20s.; Walkham United, 5s.; West Kitty, 10; Wheal Fortune, 10s. to 15s.; Wheal Jane, 13s.; Wheal Kitty, 22s. 6d.; and Wheal Owles, 6 to 8.

In shares of gold and silver mines there has been less business doing. Richmonds are steady at 8 to 8 1/2; Akankoos, 5s. to 7s. 6d.; Chontales, 1s. 3d. to 3s. 9d.; Consolidated, 4s. to 6s.; Flagstaff, 5s. to 7s. 6d.; Hoover Hill, 2s. 6d. to 5s.; Indian Kingston, 5s. to 7s. 6d.; Indian Phœnix, 30s. to 32s. 9d.; Isabelle, 7s. 6d. to 12s. 6d.; Indian Consolidated, 15s. to 20s.; Indian Trevelyan, 10s. to 15s.; I.X.L., 2s. to 4s.; Kapangas, 13s. 9d. to 16s. 3d.; Mysore Reef, 2s. 6d. to 3s. 9d.; New Callao, 10s. to 15s.; Nava de Jadraque, 1s. 6d.; New Gold Run, 4s. 6d.; ditto (pref.), 5s.; Nundydroog, 6s. 3d.; Nine Reefs, 5s. to 7s. 6d.; Rio Grande do Sul, B, 15s. to 20s.; Soubach and Catir, 10s. to 20s.; Simon's Reef, 2s. 6d.; and Tolima, A, 2 to 3.

In shares of oil and miscellaneous companies prices are steady. Glasgow Coal Exchange remain at 18s.; and Lawes Chemical, 5 3/8 to 6.

EDINBURGH.—Messrs. THOMAS MILLER and SONS, stock and share brokers, Princes-street (July 5), write:—The market for home railway stock has lately showed more strength, but prices have eased off again to-day. Caledonian ordinary at 104 1/4 shows no change. North British has risen from 93 3/8 to 93 3/4; Great North of Scotland from 57 to 57 1/4; North-Eastern from 168 to 168 1/2; Great Eastern from 72 3/8 to 72 3/4; Brighton deferred at 128 1/8 shows a rise of 3/8. Glasgow and South-Western debenture stock has improved from 109 1/2 to 110 1/4. Canadians have fluctuated. On balance Grand Trunk ordinary has risen from 18 7/16 to 18 5/8; the Third Preference from 41 1/4 to 42 1/2. Great Western of Canada shares have improved from 13 1/4 to 13 5/16. Americans have been very good. New York, Pennsylvania, and Ohio first bonds have risen from 43 to 44; Erie shares from 36 1/4 to 36 3/4; Ontario from 24 3/8 to 25 1/4; Ohio and Mississippi from 33 1/2 to 36 5/8; Oregon preference from 48 to 49 1/2. Reading have receded from 30 to 29 1/2. National Bank has improved from 299 to 300 1/2. Royal from 210 to 213. Union have receded from 24 1/4 to 23 3/4. Insurance shares have been quiet, and show little change. Hudson's Bay shares have declined from 37 1/2 cum. to 32 3/4 ex all. Edinburgh Gas have improved from 45 1/4 to 45 1/2. Young's Paraffin from 10 to 10 1/4. Burntisland Oil have declined from 10 to 9 3/4 Uphall Oil from 8 to 7 3/4. Prairie Cattle, new, from 14 to 13 15/16.

IRISH MINING AND MISCELLANEOUS COMPANIES SHARE MARKET.

CORK.—Messrs. J. H. CARROLL and SONS, stock and share brokers, South Mall (July 5) write:—Markets steady to-day, and Great Southerns changed hands at 114, and Midlands at 83 1/4, also Limericks at 31. National Banks changed hands at 23 3/4, and Munster at 7. Nothing done in Provincial or Hibernians. Cork Steam Packets were bought at 10 3/8, and Lyons at 5 1/8. Gas shares remain at 6 1/8, and Dalys at 2 1/4 to 3. Gresham Hotel shares were asked for at 3 1/2, and Brewerys changed hands at 5 1/16. No change in Harbour Board Debentures.

ICELAND SULPHUR AND COPPER COMPANY.—The offices of this company are now situated at 15, Walbrook.

CHAMPION MINE VENTILATOR.—An improved ventilator, invented by Mr. FRANCIS MURPHY, C.E., and now being introduced by M. Kinsella, of Chicago, is at present being very generally adopted in the United States, and has given great satisfaction to all who have used it. The fan wheels of the Champion ventilators are so constructed that the flanges or blades do not oppose any flat surface to the air in the direction of their motion, and their contact with the air moved is reduced to a minimum; hence the great saving in power, the amount of useful work averaging about 10,000 cubic feet of air per minute for each horse power consumed. The size of the fans is remarkably small for the amount of air moved; for a ventilator having a working capacity of 75,000 cubic feet of air per minute through good airways, they are 6 ft. in diameter; for 100,000, 7 ft., and for 130,000, 8 ft. The width of the blade is also proportionally small. The fan wheels being on the same shaft balance each other perfectly for lateral pressure, each receiving equally the pressure due to the rarefication of the air inside the chamber; but they receive it in opposite directions, consequently the pressure on one neutralises that on the other, which is another source of saving power, as well as in the wear and tear of the machinery. It is obvious that these ventilators can be built to move any required amount of air without becoming either very ponderous or very expensive, and, being portable, they can readily be removed from one locality to another. The fan is well worth the consideration of all arranging ventilating apparatus for mines.

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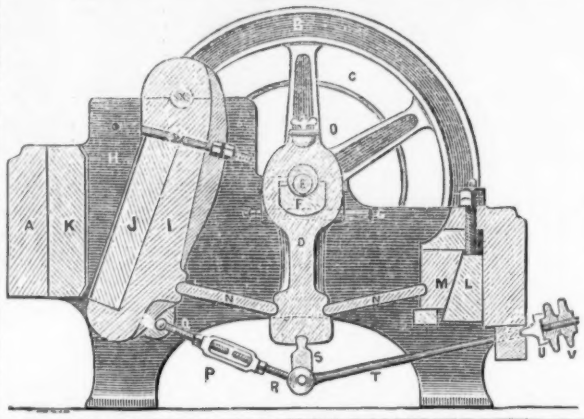

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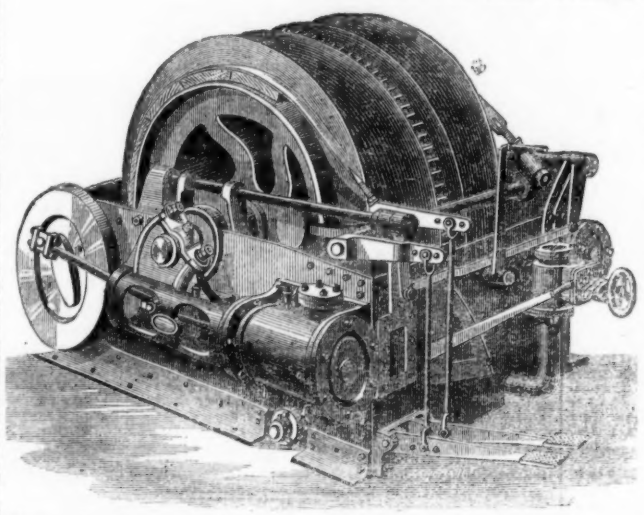

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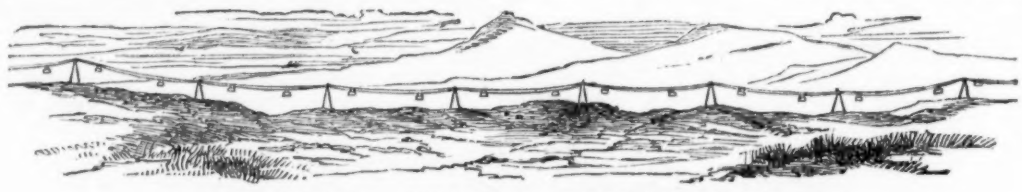

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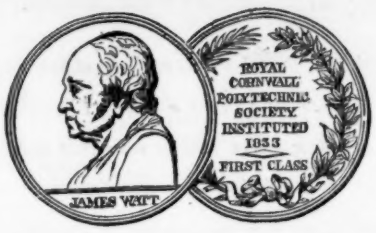

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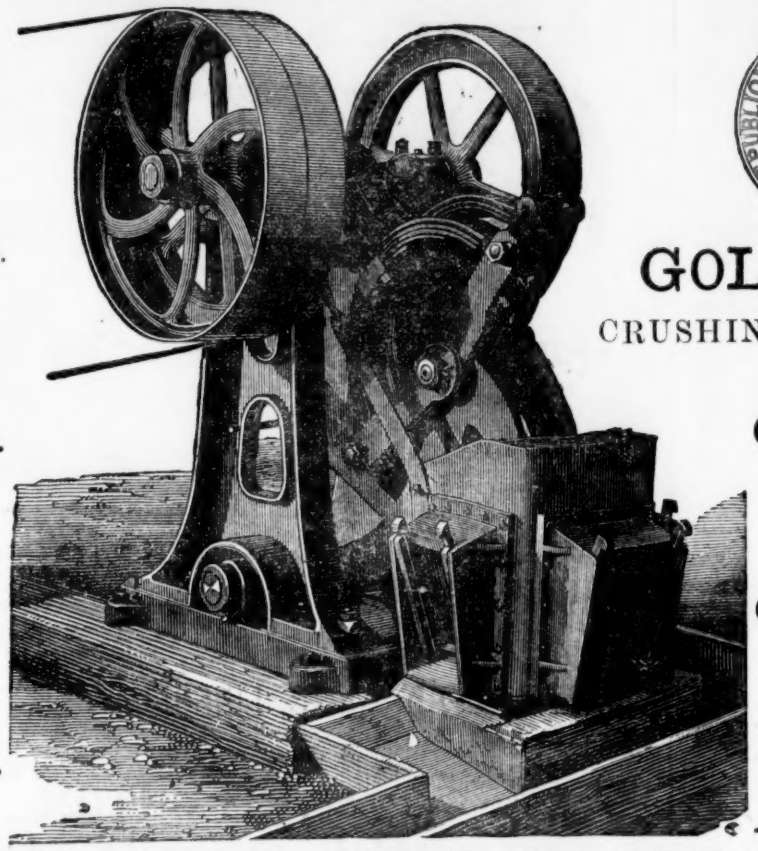

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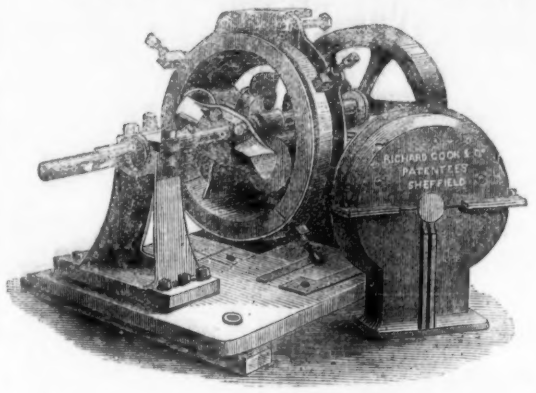

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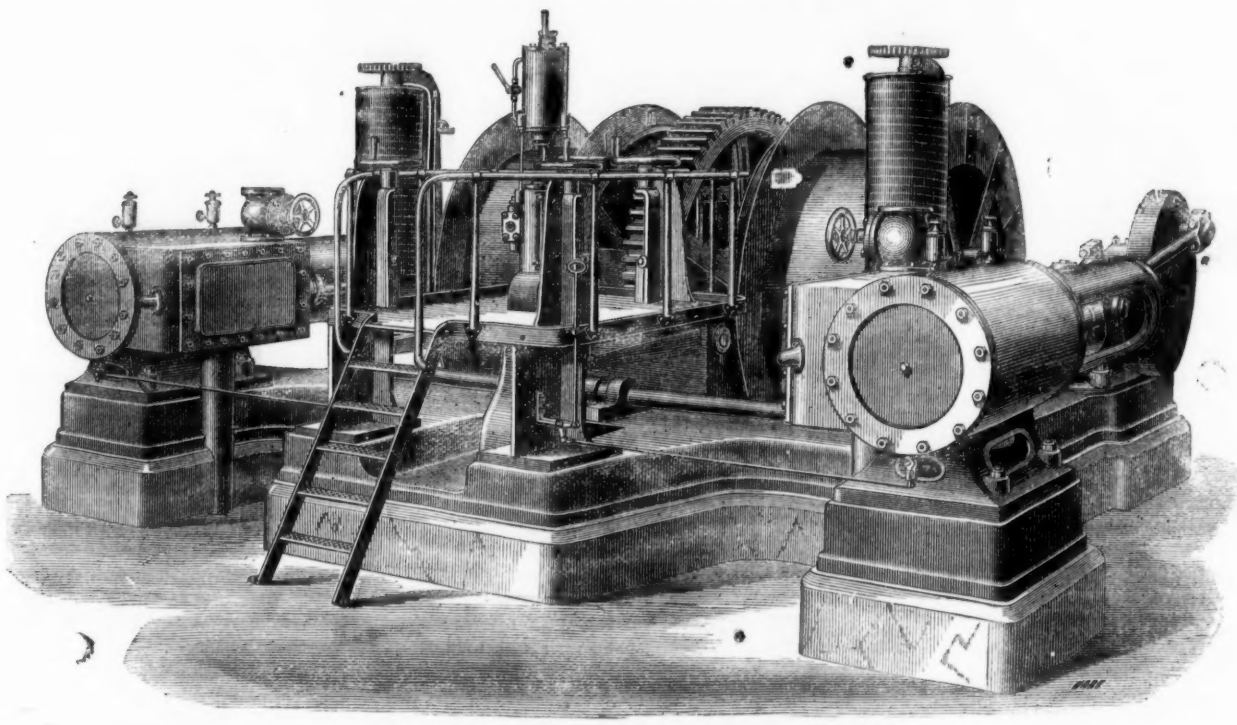
TANGYE BROTHERS ARGYLE STREET.

TANGYE'S IMPROVED

HAULING & WINDING ENGINES.

WITH STEAM REVERSING GEAR.

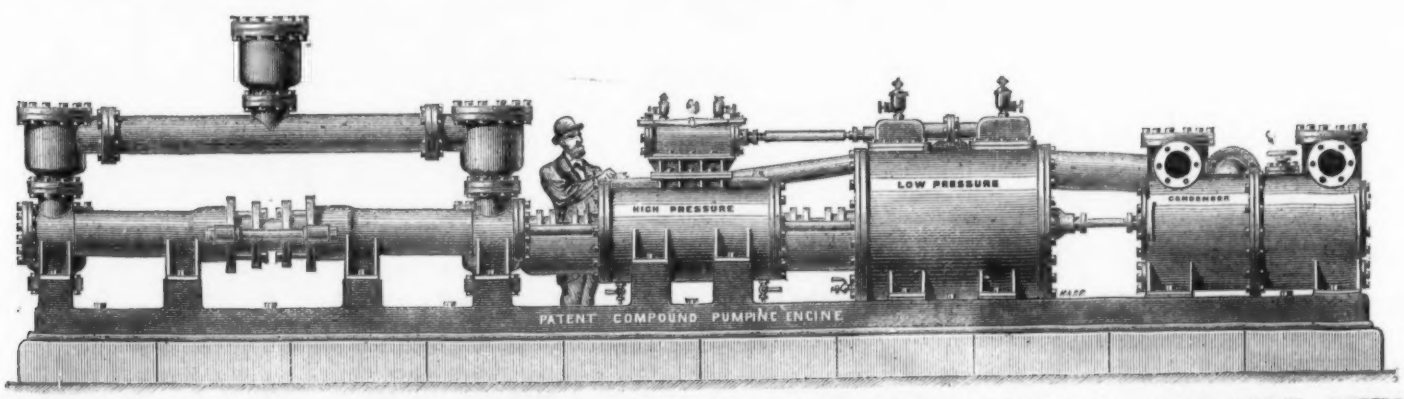


TANGYE'S DIRECT-ACTING

COMPOUND PUMPING ENGINE

For use in Mines, Water Works, Sewage Works,

And all purposes where Economy of Fuel is essential.



SUCCESSFULLY WORKING at the NEWCASTLE and GATESHEAD WATERWORKS, the ADELAIDE, CHESTERFIELD and BOYTHORPE, WYKEN, and other COLLIERIES.

CATALOGUES FORWARDED ON APPLICATION.

ROYAL AGRICULTURAL SHOW, READING, July 10 to 14 inclusive—Stand 271.—MACHINERY IN MOTION DEPARTMENT.—H. R. MARSDEN will exhibit IN FULL OPERATION his new patent Fine Crusher or Pulveriser, 12 by 3 inches at the mouth; also his Improved Patent Stonebreaker, 15 by 10 inches at the mouth. Parties interested are invited to bring samples of material, and to see them reduced.

PARIS EXHIBITION, 1878. GAINED THE GRAND PRIZE. THE TRIPLE AWARD. Gold Medal, Silver Medal, and Honourable Mention in competition with all the World.

THE BLAKE-MARSDEN NEW PATENT IMPROVED STONE BREAKERS AND ORE CRUSHERS.

ORIGINAL PATENTEE AND ONLY MAKER.

H. R. MARSDEN,

ALSO PATENTEE AND ONLY MAKER OF THE

NEW PATENT FINE CRUSHER OR PULVERIZER,

FOR REDUCING TO AN IMPALPABLE POWDER, OR ANY DEGREE OF FINENESS REQUIRED,

GOLD QUARTZ, SILVER, COPPER, TIN, ZINC, LEAD,

AND ORES OF EVERY DESCRIPTION;

Also Cement, Barytes, Limestone, Chalk, Pyrites, Coprolite, &c., &c. These Machines are in successful operation in this country and abroad, and reference to users can be had on application.

PATENT REVERSIBLE CUBING and CRUSHING JAWS, IN FOUR SECTIONS,
WITH PATENT FACED BACKS, REQUIRING NO WHITE METAL IN FIXING.

NEW PATENT CRUCIBLE CAST-STEEL CONNECTING RODS.
NEW PATENT RENEWABLE TOGGLE CUSHIONS, &c.

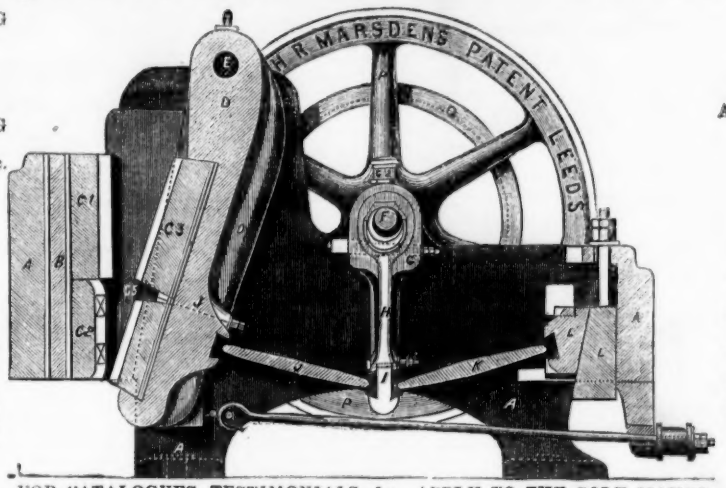
OVER 4000 IN USE.

EXTRACT FROM TESTIMONIALS.
PULVERISER.

"I have great pleasure in bearing testimony to the merits and capabilities of your patent combined fine crusher and sieving apparatus. I have tried it on a variety of ores and minerals, and it pulverizes them with equal success. You can put in a small paving stone, and bring it out like flour."

"The power required to drive it is very small, being from 4 to 5 horse, and the repairs are almost nil."

"I am sure the machine will be a success, and a great one, and there is any amount of demand for such a machine. We can work it with 20 lbs. of steam, and our engine, which is a 12-h.p., plays with the work in fact we run the Stonebreaker and the Pulveriser both together with 35 lbs."



AWARDED OVER

60

FIRST-CLASS GOLD AND SILVER MEDALS.

ADOPTED BY THE PRINCIPAL CORPORATIONS, CONTRACTORS, MINING COMPANIES, &c., IN ALL PARTS OF THE WORLD.

ROAD METAL BROKEN EQUAL TO HAND, AT ONE-TENTH THE COST.

EXTRACTS FROM TESTIMONIALS.
STONEBREAKER.

"The 15 × 8 stonebreaker gives perfect satisfaction. It produces a more cubical stone than any others I have seen at work."

"Your 15 × 10 machine makes the best road metal I have ever seen put through a machine—in fact, comparing favourably with hand broken."

"Your 10 × 7 crusher at the Aruba Gold Mines will crush 90 to 100 tons per 24 hours of the hardest gold quartz to 1 'size.'"

"Some of your testimonials do not give your machines half their due. I have seen men hammering away on a big rock for a quarter of a day which your machine would reduce to the required size in a quarter of a minute. I would guarantee that your largest size machine would reduce more of the Cornish tin capels (which is the hardest rock of England) in a day than 200 men, and at 1-25th the cost."

GREATLY REDUCED PRICES ON APPLICATION.

FOR CATALOGUES, TESTIMONIALS, &c., APPLY TO THE SOLE MAKER,

H. R. MARSDEN, SOHO FOUNDRY, LEEDS.

JOHN CAMERON'S

SPECIALITIES ARE HIS

STEAM PUMPS

FOR

COLLIERY PURPOSES.

Specially adapted for forcing Water any height

ALSO, FOR

SINKING, FEEDING BOILERS AND STEAM FIRE ENGINES,

which he has made over 8000.

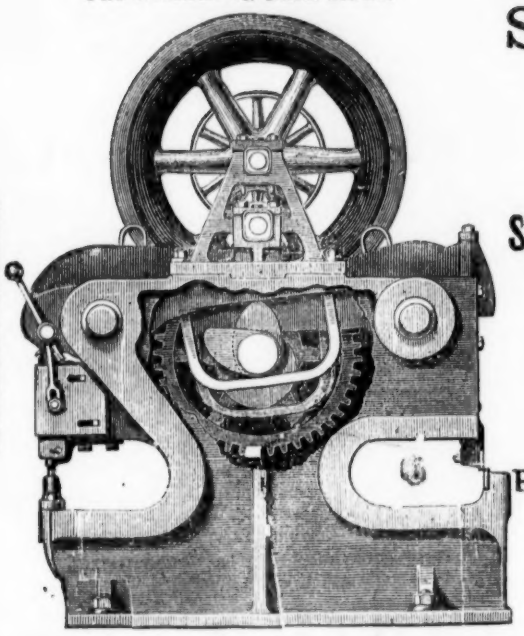
ALSO, HIS

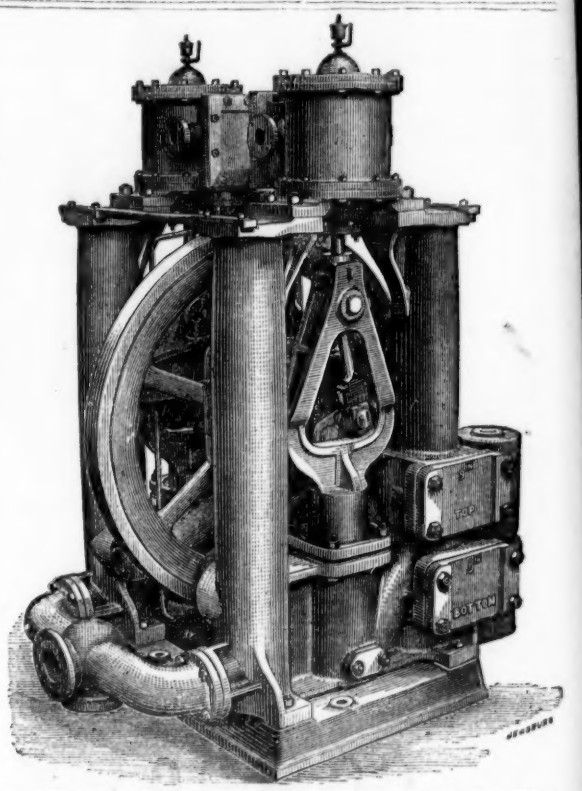
PATENT CAM AND LEVER

PUNCHING & SHEARING MACHINES.

Works: Oldfield Road, Salford, Manchester.

FLY-WHEELS ON BOTH SIDES.





"KING AND HUMBLE'S" PATENT DETACHING HOOK

To prevent over winding

PATENT SAFETY CAGE,

suspend in Shaft in cases of fracture of Winding Rope

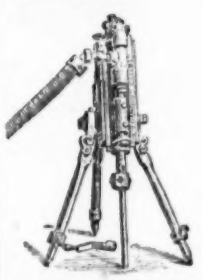
Winding and Hauling Engines,
Special Centrifugal Pumps,
Weighing Machines,
Steel Castings, Mining Steel and Tools,
Winches, Steel Shovels, Pulleys,
Mining Machinery of every description.
Brick Machinery and Mortar Mills.

Stephen Humble, Engineer, Derby.

ENGLISH CAPITALIST wishing a CORRECT REPORT on the SILVER MINES of COLORADO will do well to apply to—Capt. DANIEL ROBERTS, Georgetown, Colorado.

THE "CHAMPION" ROCK BORER

MINE AND QUARRY STANDS, STEEL DRILLS, SPECIALLY PREPARED INDIARUBBER HOSE, TESTED IRON PIPES, &c.



Air-Compressing Machinery,

Simple, strong, and giving most excellent results.

Full particulars of rapid and economical work effected by this machinery, on application.

R. H. HARRIS,
ENGINEER,
63, QUEEN VICTORIA STREET, LONDON, E.C.

J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),
Manufacturers of

CRANE, INCLINE, AND PIT CHAINS.

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES, FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions

WELDED STEEL CHAINS { FOR CRANES, INCLINES, MINES, &c., MADE ALL SIZES.

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors) at their offices, 26, FLEET STREET, where all communications are requested to be addressed.—*July 8, 1882.*